

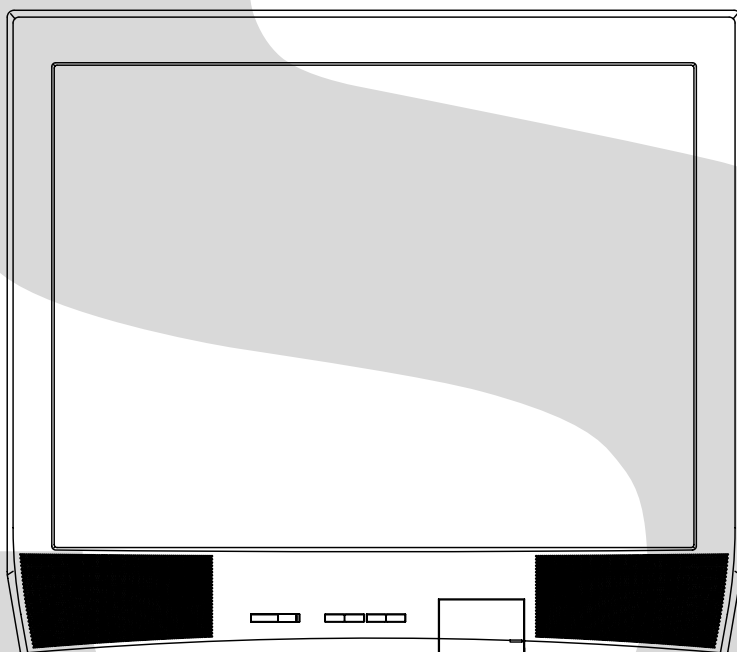
TOSHIBA

FILE NO. 050-200404

SERVICE MANUAL

COLOR TELEVISION

32A14



DOCUMENT CREATED IN JAPAN, Feb., 2004

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal [Note 2] should be more than 1M ohm by using the 500V insulation resistance meter [Note 1].
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.

When replacing an IC's or transistors, use only specified silicon grease (YG6260M).

Remove all old silicon before applying new silicon.

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GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	32 inch / 800.1mmV
			CRT Type	Normal
			Deflection	110 degree
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		2Speaker
			Position	Front
			Size	1.8 x 3.9 Inch
			Impedance	8 ohm
		Sound Output	MAX	5.0 + 5.0 W
G-2	Tuning System		10%(Typical)	4.0 + 4.0 W
		NTSC3.58+4.43 /PAL60Hz		No
		Broadcasting System		US System M
		Tuner and Receive CH	System	1Tuner
			Destination	USA(W/ CATV)
			Tuning System	F-Synth
			Input Impedance	VHF/UHF 75 ohm
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate Frequency	Picture(FP)	45.75MHz
			Sound(FS)	41.25MHz
G-3	Power		FP-FS	4.50MHz
		Preset CH		No
		Stereo/Dual TV Sound		Yes
		Tuner Sound Muting		Yes
		Power Source	AC	120V AC 60Hz
			DC	-
		Power Consumption	at AC	
			Stand by (at AC)	130 W at AC 120 V 60 Hz
			Per Year	3 W at AC 120 V 60 Hz
				-- kWh/Year
G-4	Regulation	Protector	Power Fuse	Yes
			Safety Circuit	Yes
			IC Protector(Micro Fuse)	No
			Safety	UL/CSA
G-5	Temperature		Radiation	FCC/IC
			X-Radiation	DHHS/HWC
			Operation	+5oC ~ +40oC
G-6	Operating Humidity		Storage	-20oC ~ +60oC
				Less than 80% RH

GENERAL SPECIFICATIONS

G-7	On Screen Display	Menu		Yes	
		Menu Type		Icon	
		Picture		Yes	
		Contrast		Yes	
		Brightness		Yes	
		Color		Yes	
		Tint		Yes	
		Sharpness		Yes	
		Audio		Yes	
		Bass		Yes	
		Treble		Yes	
		Balance		Yes	
		BBE On/Off		No	
		Stable Sound On/Off		Yes	
		Surround On/Off		Yes	
		Set Up		Yes	
		TV/CABLE(CATV)		Yes	
		CH Program		Yes	
		Add/Erase		Yes	
		Option		Yes	
		Language		Yes	
		V-chip		Yes	
		CH Label		Yes	
		Favorite CH		Yes	
		Lock		Yes	
		On/Off Timer		Yes	
		Color Stream DVD/DTV		Yes	
		Control Level		Yes	
		Volume		Yes	
		Brightness		Yes	
		Contrast		Yes	
		Color		Yes	
		Tint		Yes	
		Sharpness		Yes	
		Tuning		No	
		Bass		Yes	
		Treble		Yes	
		Balance		Yes	
		Back Light		No	
		Stereo,Audio Output,SAP		Yes	
		Video		Yes	
		Color Stream		Yes	
		Channel(TV/Cable)		Yes	
		CH Label		Yes	
		Game Timer		Yes	
		Sleep Timer		Yes	
		Sound Mute		Yes	
		V-chip Rating		Yes	
		16: 9		No	
G-8	OSD Language		English French Spanish		
G-9	Clock and Timer	Sleep Timer	Max Time	120 Min	
			Step	<u>10</u> Min	
		On/Off Timer	Program(On Timer / Off Timer / Clock)		Yes
		Wake Up Timer			No
		Timer Back-up (at Power Off Mode)	more than	--	Min Sec

GENERAL SPECIFICATIONS

G-10	Remote Control	Unit	RC-GW
		Glow in Dark Remocon	Yes
		Format	Toshiba
		Custom Code	TV:40-BF h
		Power Source	3V
		Voltage(D.C)	UM-4 x 2 pcs
		UM size x pcs	
		Total Keys	49 Keys
		Keys	
		Power	Yes
		1	Yes
		2	Yes
		3	Yes
		4	Yes
		5	Yes
		6	Yes
		7	Yes
		8	Yes
		9	Yes
		0	Yes
		100	Yes
		CH Up	Yes
		CH Down	Yes
		Volume Up	Yes
		Volume Down	Yes
		TV/Caption/Text	Yes
		CH1/CH2	Yes
		TV/Video(TV/AV)	Yes
		CH RTN/CH ENT(Quick View)	Yes
		Sleep	Yes
		RE Call(Call)	Yes
		Reset	Yes
		Menu/Enter	Yes
		Mute	Yes
		Exit	Yes
		MTS(Audio Select)	Yes
		Fav.Up	Yes
		Fav.Down	Yes
		16: 9	No
		Multi Brand Keys	
		CH Up(VCR)	Yes
		CH Down(VCR)	Yes
		Pause/Still	Yes
		TV/VCR(VCR)	Yes
		FF	Yes
		Rew	Yes
		Rec	Yes
		Play	Yes
		Stop	Yes
		TV	Yes
		VCR	Yes
		Cable	Yes
		DVD	Yes
		CODE	Yes
		Volume Up(DVD)	Yes
		Volume Down(DVD)	Yes
		DVD CLEAR	Yes
		TOP MENU	Yes
		DVD MENU	Yes
		DISPLAY	Yes

GENERAL SPECIFICATIONS

G-11	Features	Auto Degauss	Yes
		Auto Shut Off	Yes
		Canal+	No
		CATV	Yes
		Anti-theft	No
		Rental	No
		Memory(Last CH)	Yes
		Memory(Last Volume)	Yes
		V-Chip	Yes
		Type	USA,Toshiba Type
		BBE	No
		Auto Search	No
		CH Allocation	No
		SAP	Yes
		Just Clock Function	No
		CH Label	Yes
		VM Circuit	No
		Full OSD	No
		Premiere	No
		Comb Filter	Yes
			3 Lines
		Auto CH Memory	Yes
		Hotel Lock	No
		Closed Caption	Yes
		Stable Sound	Yes
		FBT Leak Test Protect	Yes
		CH Lock	Yes
		Video Lock	Yes
		Game Timer (Max Time:120 Min)	Yes
		Energy Star	No
		Favorite CH	Yes
		Surround	Yes
		16:9 Mode	No
		2 Tuner P-in-P	No
G-12	Accessories	Owner's Manual	English /French
		Language W/ Warranty	Yes
		Remote Control Unit	Yes
		Rod Antenna	No
		Poles	
		Terminal	
		Loop Antenna	No
		Terminal	
		U/V Mixer	No
		DC Car Cord (Center+)	No
		Guarantee Card	No
		Warning Sheet	No
		Circuit Diagram	No
		Antenna Change Plug	No
		Service Facility List	No
		Important Safety Instruction	No
		Dew/AHC Caution Sheet	No
		AC Plug Adapter	No
		Quick Set-up Sheet	No
		Battery	Yes
		UM size x pcs	UM4 size x 2
		OEM Brand	No
		AC Cord	No
		AV Cord (2Pin-1Pin)	No
		Registration Card (NDL Card)	Yes
		ESP Card	No[From '04 MAR O/R]
		PTB Sheet	No
		300 ohm to 75 ohm Antenna Adapter	No

GENERAL SPECIFICATIONS

G-13	Interface	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	Yes(RED)
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input	RCA
				Audio Input	RCA x 2
				Other Terminal	No
			Rear	Video Input(Rear1)	RCA
				Video Input(Rear2)	RCA
				Audio Input(Rear1)	RCA x 2
				Audio Input(Rear2)	RCA x 2
				Video Output	RCA
				Audio Output	RCA x 2
				S- Input	Yes
				Euro Scart	No
				Color Stream	RCA x 3
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
				AC Outlet	No
G-14	Set Size	Approx. W x D x H (mm)		751 x 552 x 658.5	
G-15	Weight	Net (Approx.)		52.0kg (114.7 lbs)	
		Gross (Approx.)		58.0Kg (127.9 lbs)	
G-16	Carton	Master Carton		No	
			Content	--- Sets	
			Material	-- /--	
			Dimensions W x D x H(mm)	-- x -- x --	
			Description of Origin	No	
		Gift Box		Yes	
			Material	Double/Brown	
			Dimensions W x D x H(mm)	840 x 625 x 787	
			Design	As per Buyer's	
			Description of Origin	Yes	
		Drop Test		Natural Dropping At 1 Corner / 2 Edges / 4 Surfaces	
			Height (cm)	40 (ORION SPEC:25)	
			Container Stuffing	104 Sets/40' container	
G-17	Cabinet Material	Cabinet	Cabinet Front	PS 94V0 DECABROM	
			Cabinet Rear	PS 94V0 DECABROM	
		PCB	Non-Halogen Demand	No	
			Eyelet Demand	Yes	

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

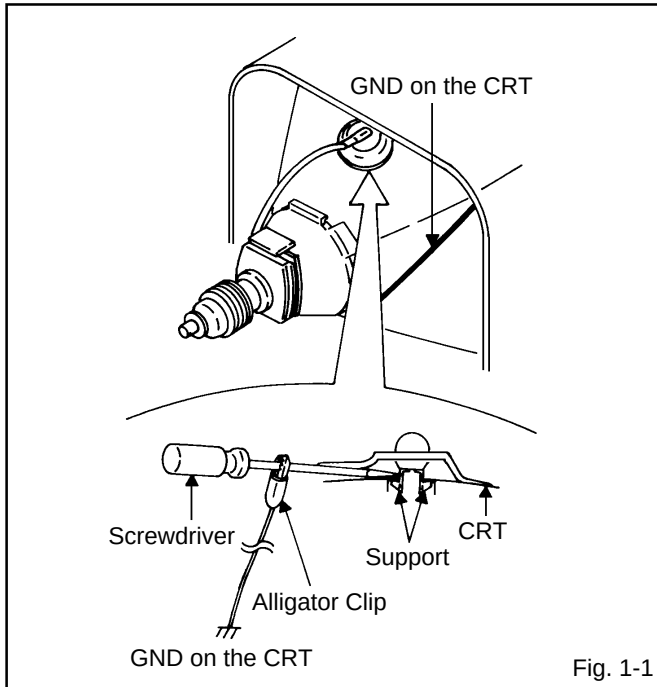
Read the following **NOTED** items before starting work.

- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

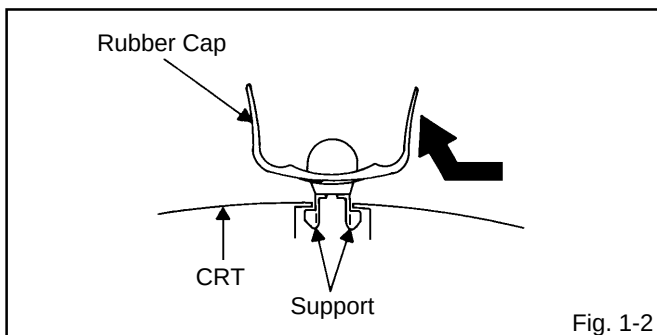
REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
(Refer to Fig. 1-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver. A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.
(Refer to Fig. 1-2.)



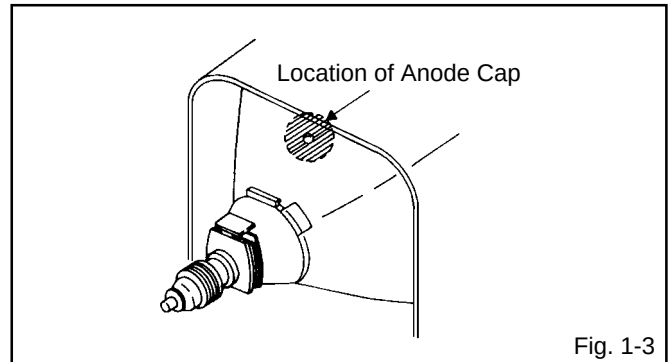
3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

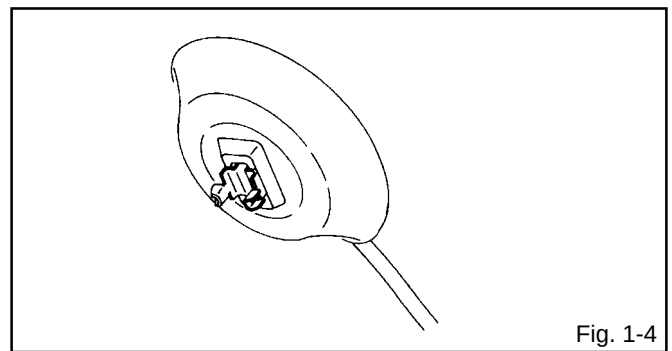
1. Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 1-3.)



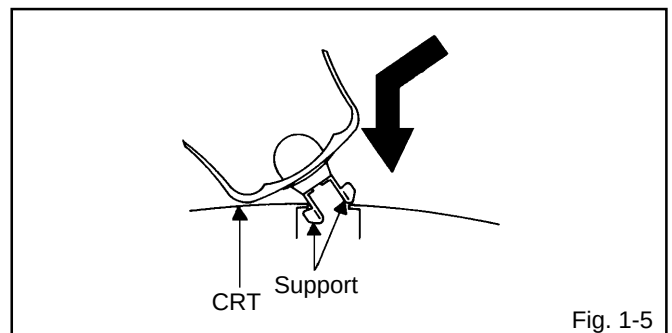
NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. (Refer to Fig. 1-4.)



4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 1-5.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

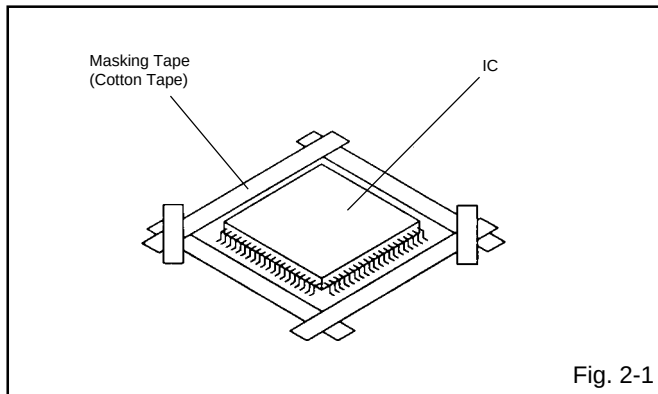
2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 2-1.)

NOTE

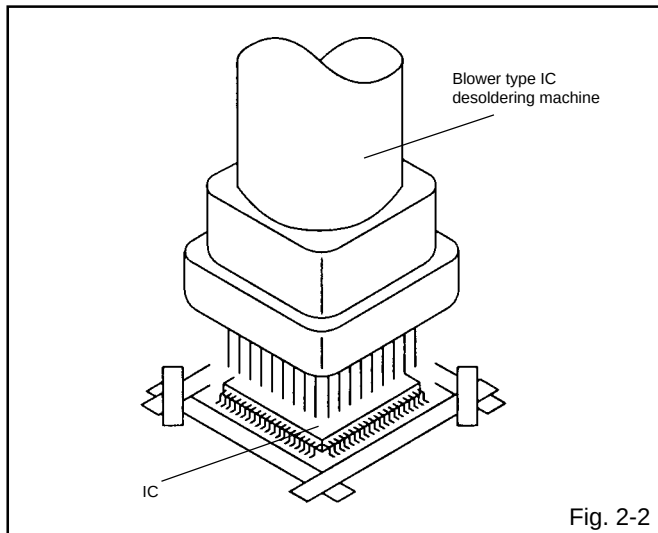
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 2-2.)

NOTE

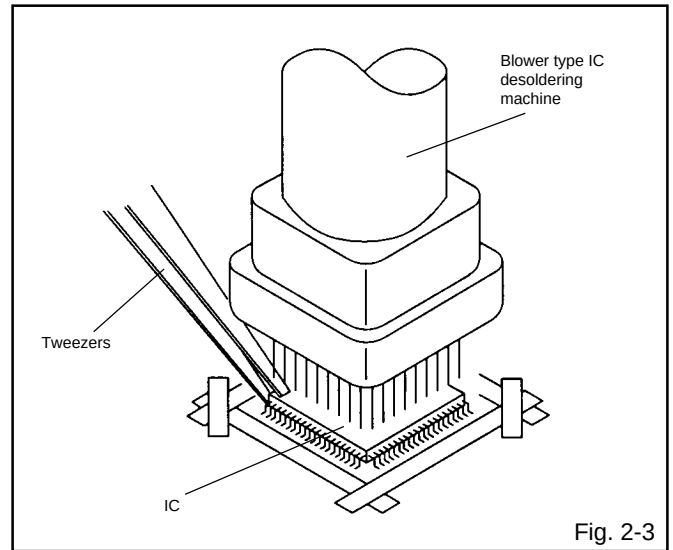
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 2-3.)

NOTE

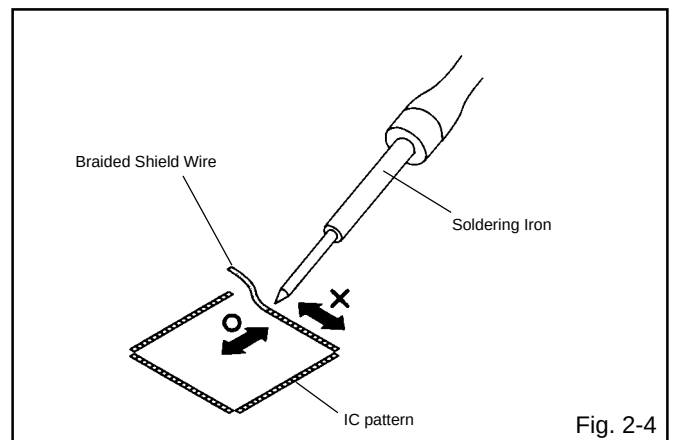
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 2-4.)

NOTE

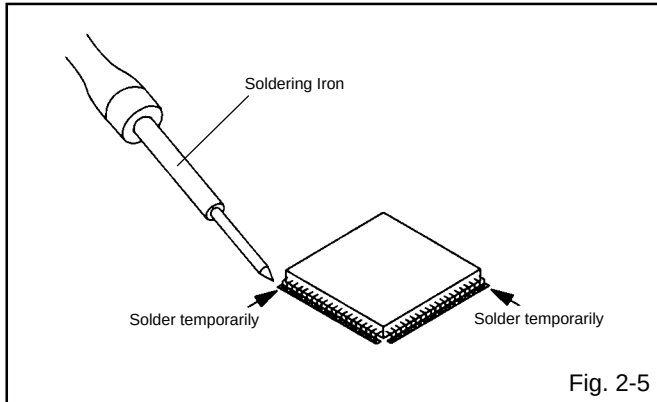
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



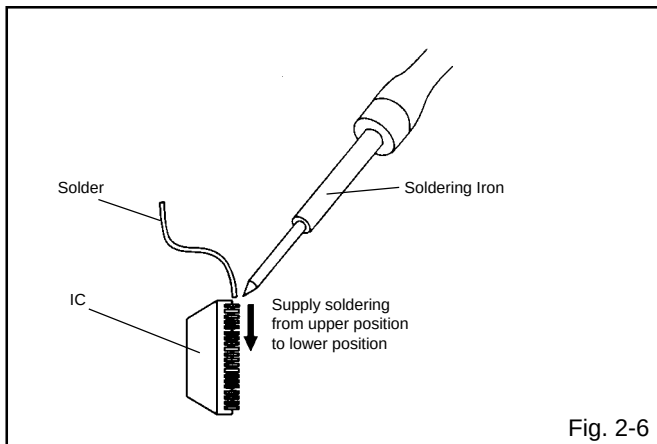
DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. (Refer to Fig. 2-5.)



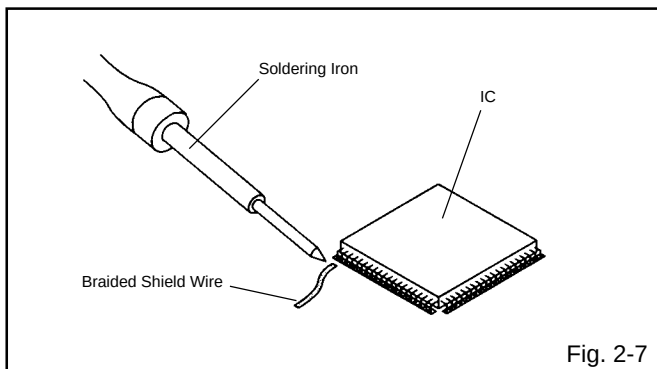
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. (Refer to Fig. 2-6.)



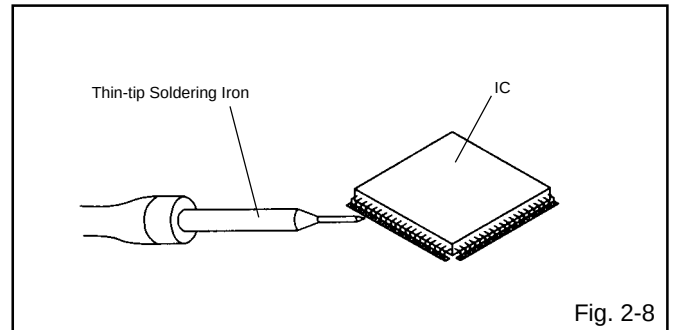
3. Absorb the solder left on the lead using the Braided Shield Wire. (Refer to Fig. 2-7.)

NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. (Refer to Fig. 2-8.)



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, always be sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 1 second.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.

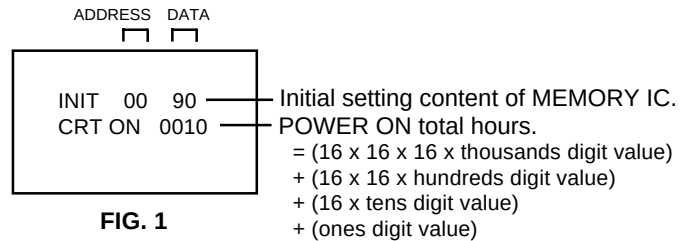


FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: No need setting for after INI 1F due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	90	E8	0A	65	5E	B3	24	37	39	AC	AA	04	40	40	40	9F
10	50	00	00	00	00	00	00	00	3F	0F	0D	E2	A8	21	40	00

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.
After the data input, set to the initializing of shipping.
9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 1 second.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.
The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen.
Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

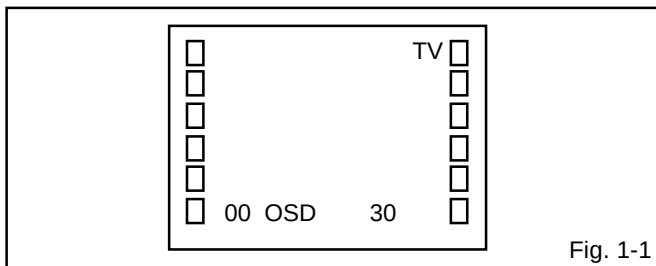


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO. FUNCTION	NO. FUNCTION
00 OSD H	19 CONTRAST CENT
01 CUT OFF	20 CONTRAST MIN
02 H. VCO	21 COLOR MAX
03 H. PHASE	22 COLOR CENTER
04 AFC GAIN	23 COLOR MIN
05 V. SHIFT	24 TINT
06 H. SIZE	25 SHARPNESS
07 V. SIZE	26 Cb DELAY FINE
08 V. LINEARITY	27 Cr DELAY FINE
09 VS CORRECTION	28 Cb PEDESTAL ADJ
10 DRIVE R	29 Cr PEDESTAL ADJ
11 DRIVE B	30 E/W PARABOLA
12 R CUT OFF	31 E/W CORNER
13 G CUT OFF	32 E/W TRAPEZIUM
14 B CUT OFF	33 LEVEL
15 BRIGHT MAX	34 SEPARATION1
16 BRIGHT CENT	35 SEPARATION2
17 BRIGHT MIN	88 READ DATA
18 CONTRAST MAX	

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set with Aging Test for more than 5 minutes.
2. Set condition is AV MODE without signal.
3. Connect the digital voltmeter to the **TP003**.
4. Adjust the **VR502** until the digital voltmeter is $135 \pm 0.5V$.

2-2: CUT OFF

1. Place the set with Aging Test for more than 15 minutes.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "CUT OFF".
3. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 10 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(12)** on the remote control to select "R. BIAS".
5. Press the CH. UP/DOWN button on the remote control to select the "R. BIAS", "G. BIAS", "B. BIAS", "B. DRIVE" or "G. DRIVE".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R. BIAS, G. BIAS, B. BIAS, B. DRIVE, and G. DRIVE at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-4: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-5: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "H. PHAS".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

ELECTRICAL ADJUSTMENTS

2-6: HORIZONTAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "H. SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes $10 \pm 4\%$.

2-7: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.

2-8: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V. SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes $9 \pm 2\%$.

2-9: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-8.
After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "V. LIN".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-10: LEVEL

1. Receive the monoscope pattern (70dB).
2. Connect the AC voltmeter to **pin 6 of CP101**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select "LEVEL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is $80 \pm 2\text{mV}$.

2-11: PARABOLA

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(30)** on the remote control to select "PARABOLA".
4. Press the VOL. UP/DOWN button on the remote control until the right and left vertical lines are straight.

2-12: TRAPEZIUM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "TRAPEZIUM".
4. Press the VOL. UP/DOWN button on the remote control until the both vertical lines of the screen become parallel.

2-13: SEPARATION 1, 2

Please do the method (1) or method (2) adjustment.

Method (1)

1. Set the multi-sound signal generator for each different L-ch and R-ch frequency (Ex. L-ch=2KHz, R-ch=400Hz) and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select "SEP 1".
4. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
5. Press the CH UP button once the set to "SEP 2" mode. Then perform the above adjustment 4.

Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch=Non input and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack (R-ch)**.
3. Press the AUDIO SELECT button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select "SEP 1".
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF.
7. Connect the oscilloscope to the **Audio Out Jack (L-ch)**.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(35)** on the remote control to select "SEP 2".
9. Press the VOL. UP/DOWN button on the remote control to adjust it until the L-ch output becomes minimum.

ELECTRICAL ADJUSTMENTS

2-14: BRIGHT CENT

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "BRI CENT".
4. Press the VOL. UP/DOWN button on the remote control until the white 0% is starting to be visible
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.
7. Press the TV/VIDEO button on the remote control to set to the CS mode.
8. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

2-15: TINT/COLOR CENT

1. Receive the color bar pattern.
2. Connect the oscilloscope to **TP024**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select "TINT".
4. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes as straight line **(Refer to Fig. 2-1)**
5. Connect the oscilloscope to **TP022**.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "COL.CENT".
7. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $110 \pm 10\%$ of the white level. **(Refer to Fig. 2-2)**
8. Receive the color bar pattern. (Audio Video Input)
9. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.
10. Press the TV/VIDEO button on the remote control to set to the CS mode.
11. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

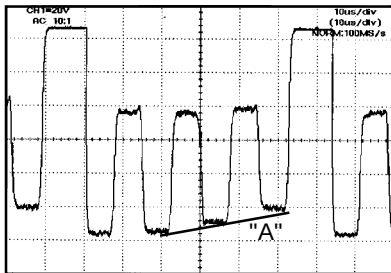


Fig. 2-1

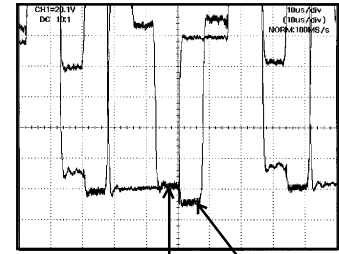


Fig. 2-2

2-16: CONTRAST MAX MANUAL

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select "CONT. MAX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "85".
3. Receive a broadcast and check if the picture is normal.
4. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 1~3. Press the TV/VIDEO button on the remote control to set to the CS mode. Then perform the above adjustments 1~3.

2-17: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-3)**

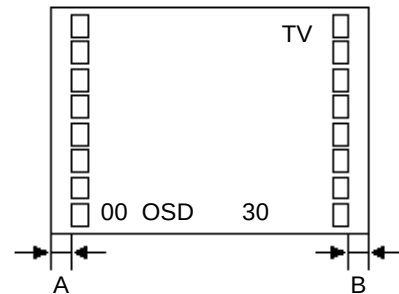


Fig. 2-3

2-18: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below. (RF/AV/CS)

NO.	FUNCTION	STEP NO.	NO.	FUNCTION	STEP NO.
02	H.VCO	03	21	COL.MAX	85
04	AFC GAIN	07	23	COL.MIN	00
05	V.SHIFT	03	25	SHARPNESS	40
09	VS.CORRECTION	37	26	CB DL	00
15	BRI.MAX	140	27	CR DL	00
17	BRI.MIN	70	28	CB PED	11
19	CONT.CENT	64	29	CR PED	09
20	CONT.MIN	20	31	CORNER	32

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

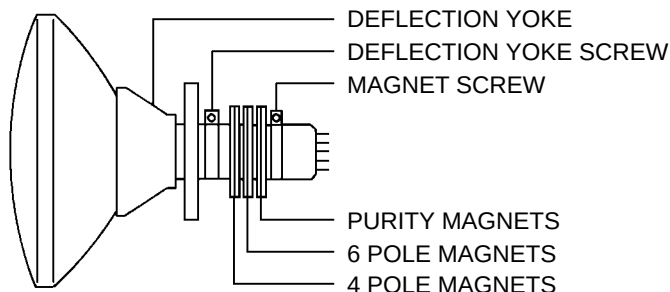


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

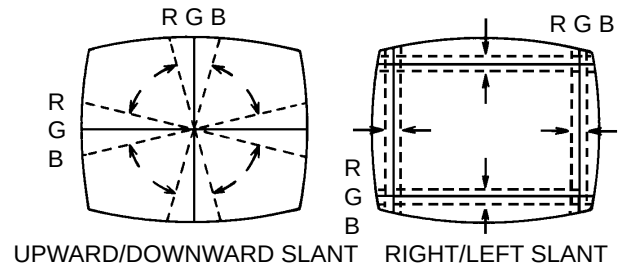
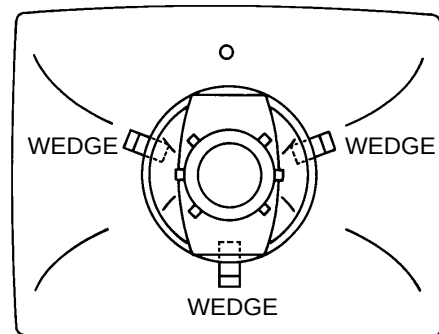


Fig. 3-2-a

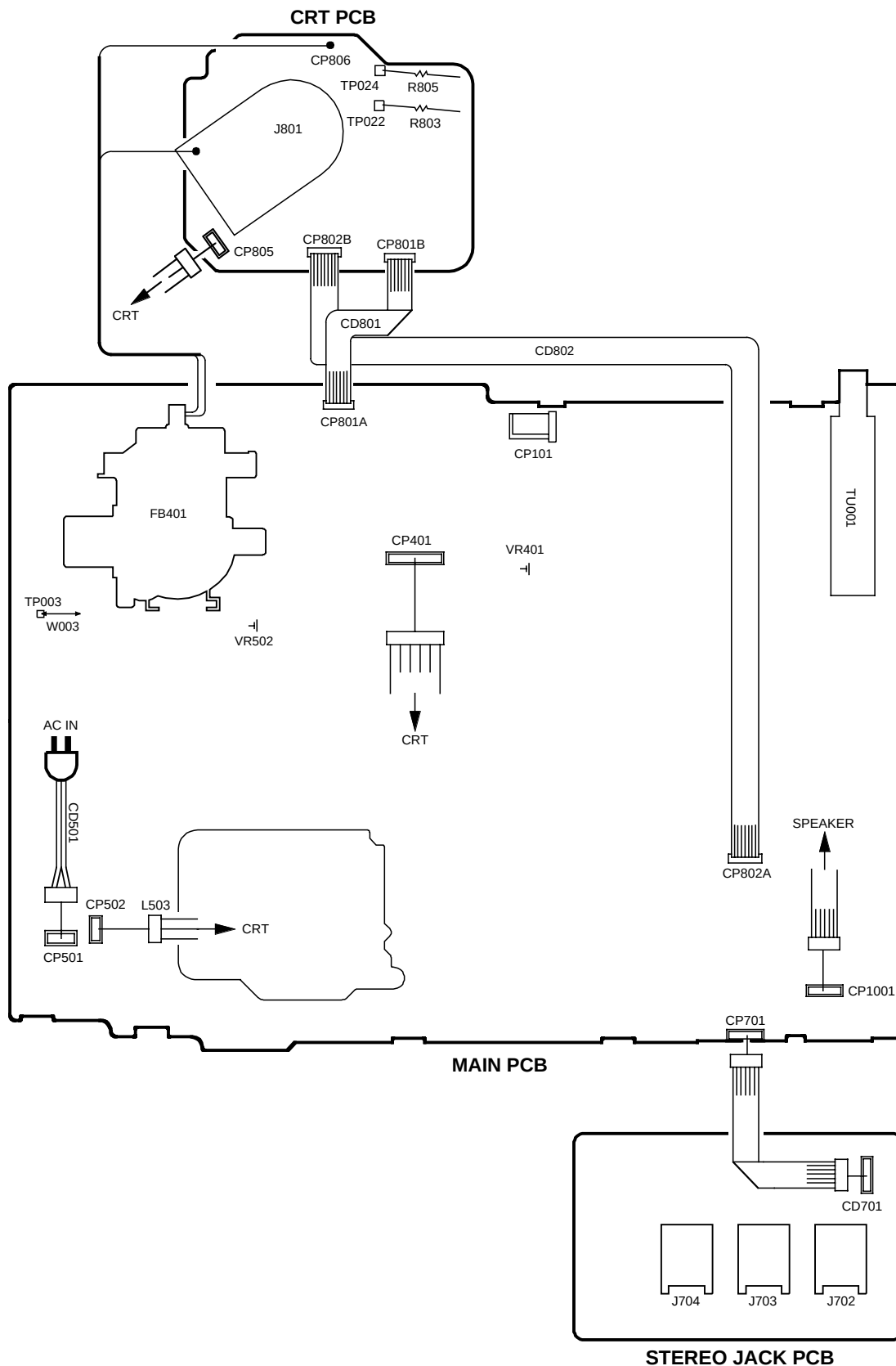


WEDGE POSITION

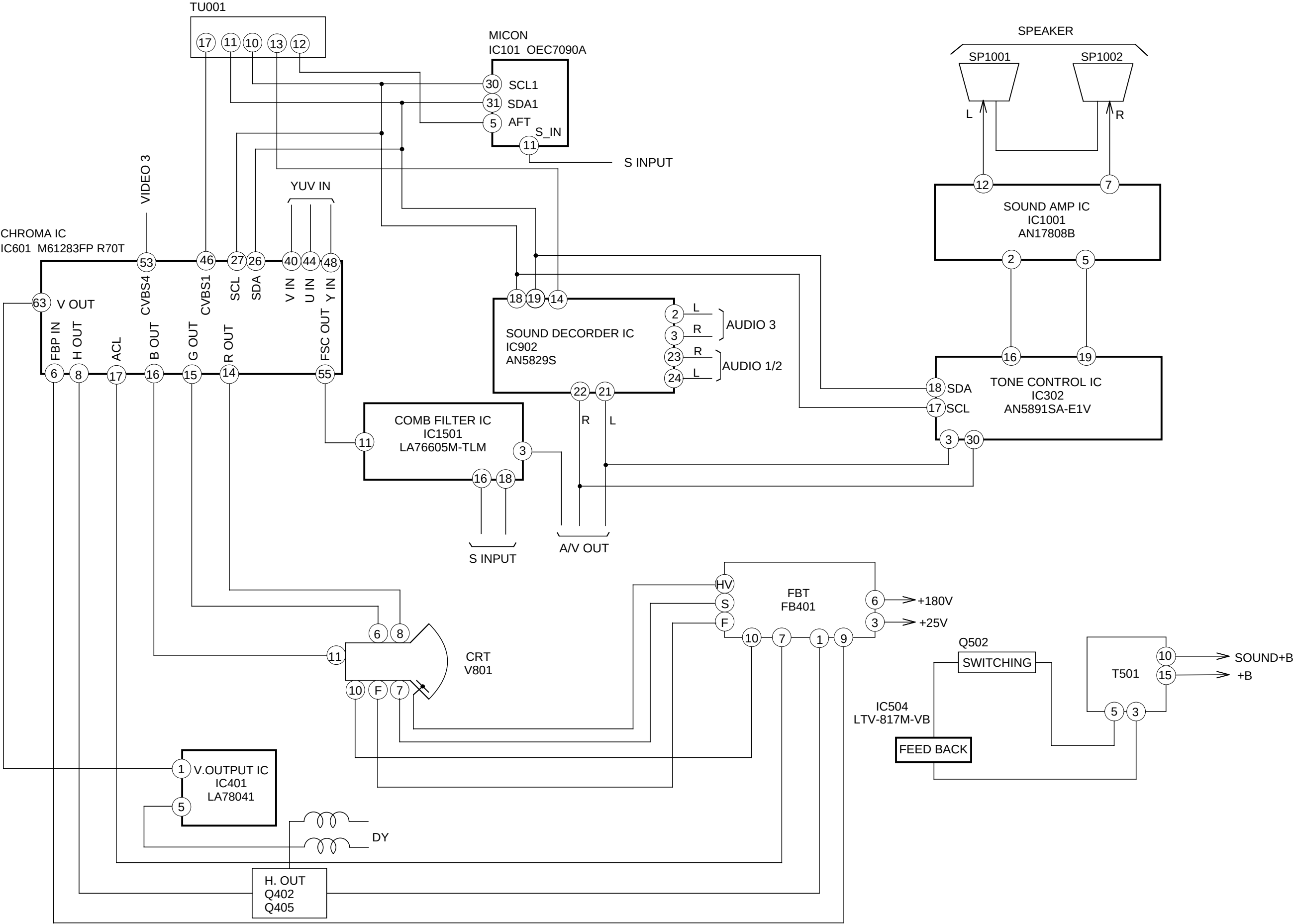
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

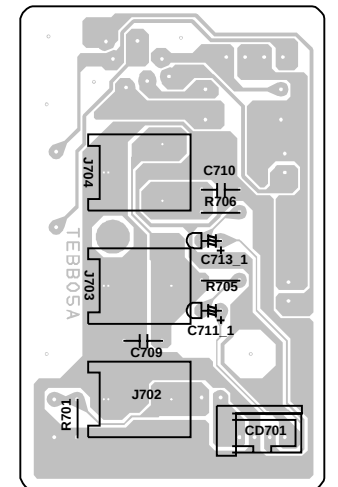
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



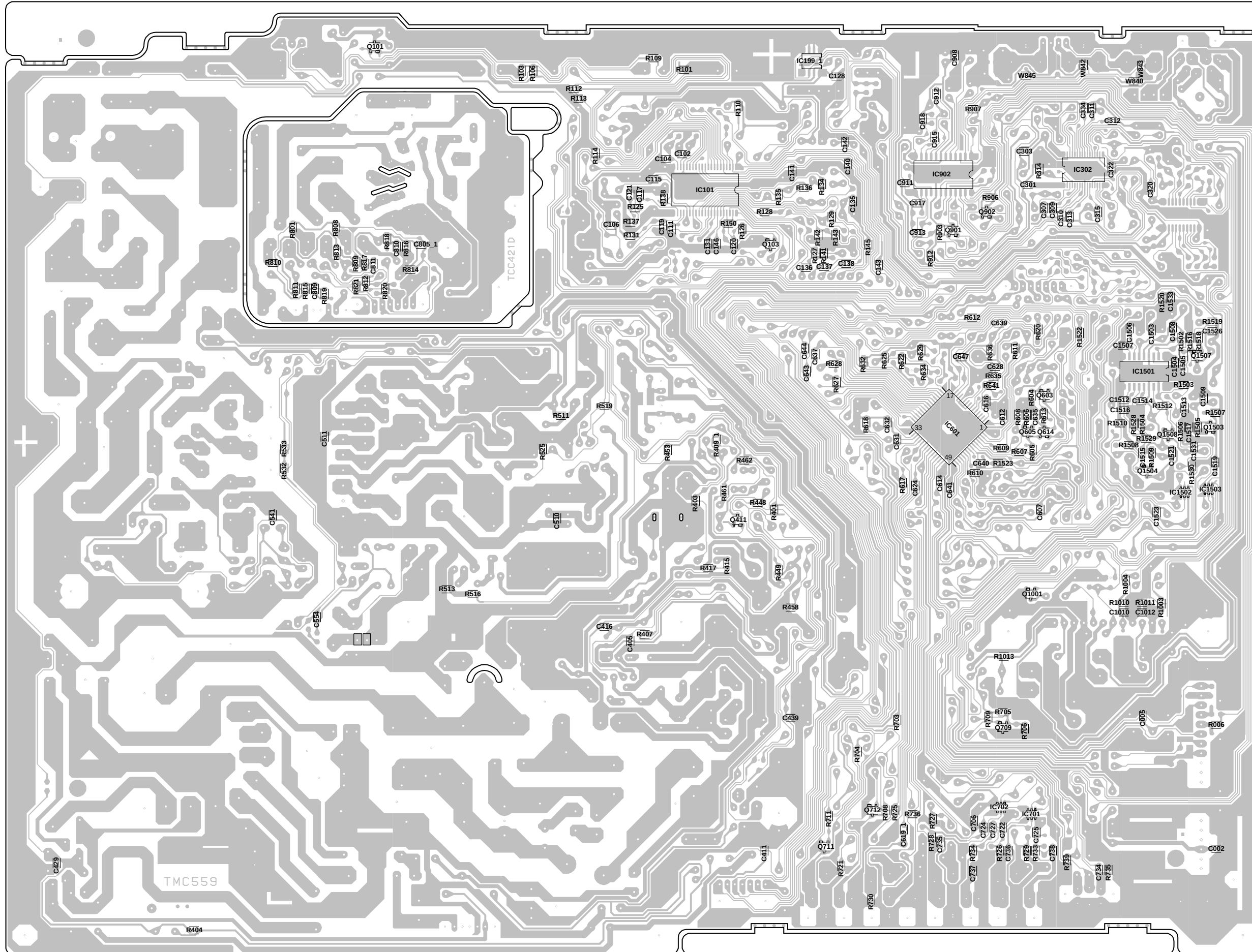
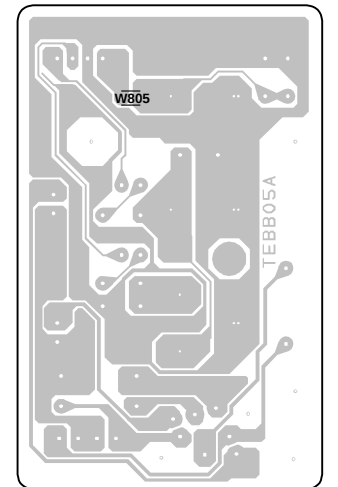
BLOCK DIAGRAM



MAIN/CRT (INSERTED PARTS)
SOLDER SIDE

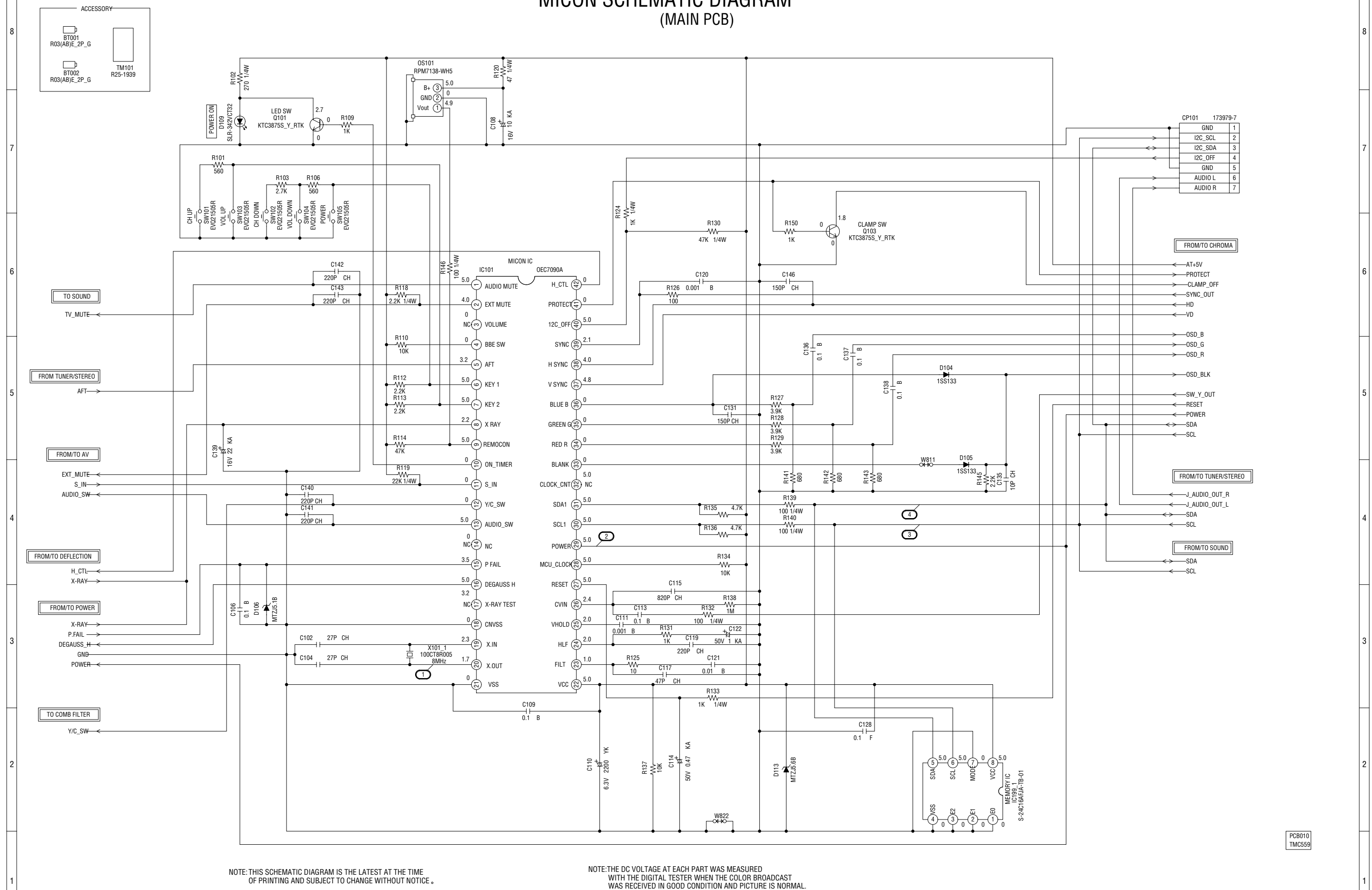


SOLDER SIDE

**SOLDER SIDE**

MICON SCHEMATIC DIAGRAM

(MAIN PCB)

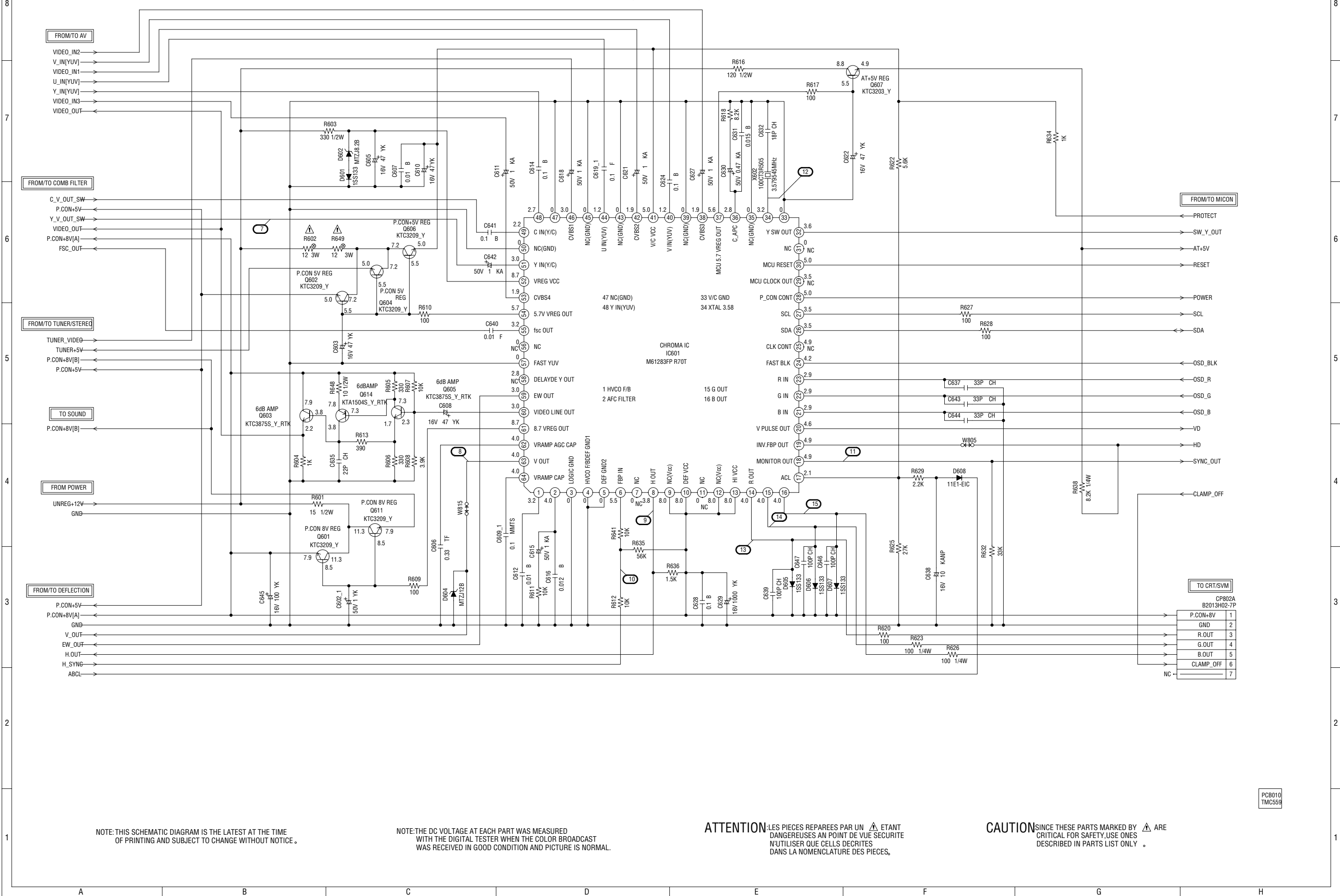


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PCB010
TMC559

CHROMA SCHEMATIC DIAGRAM
(MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

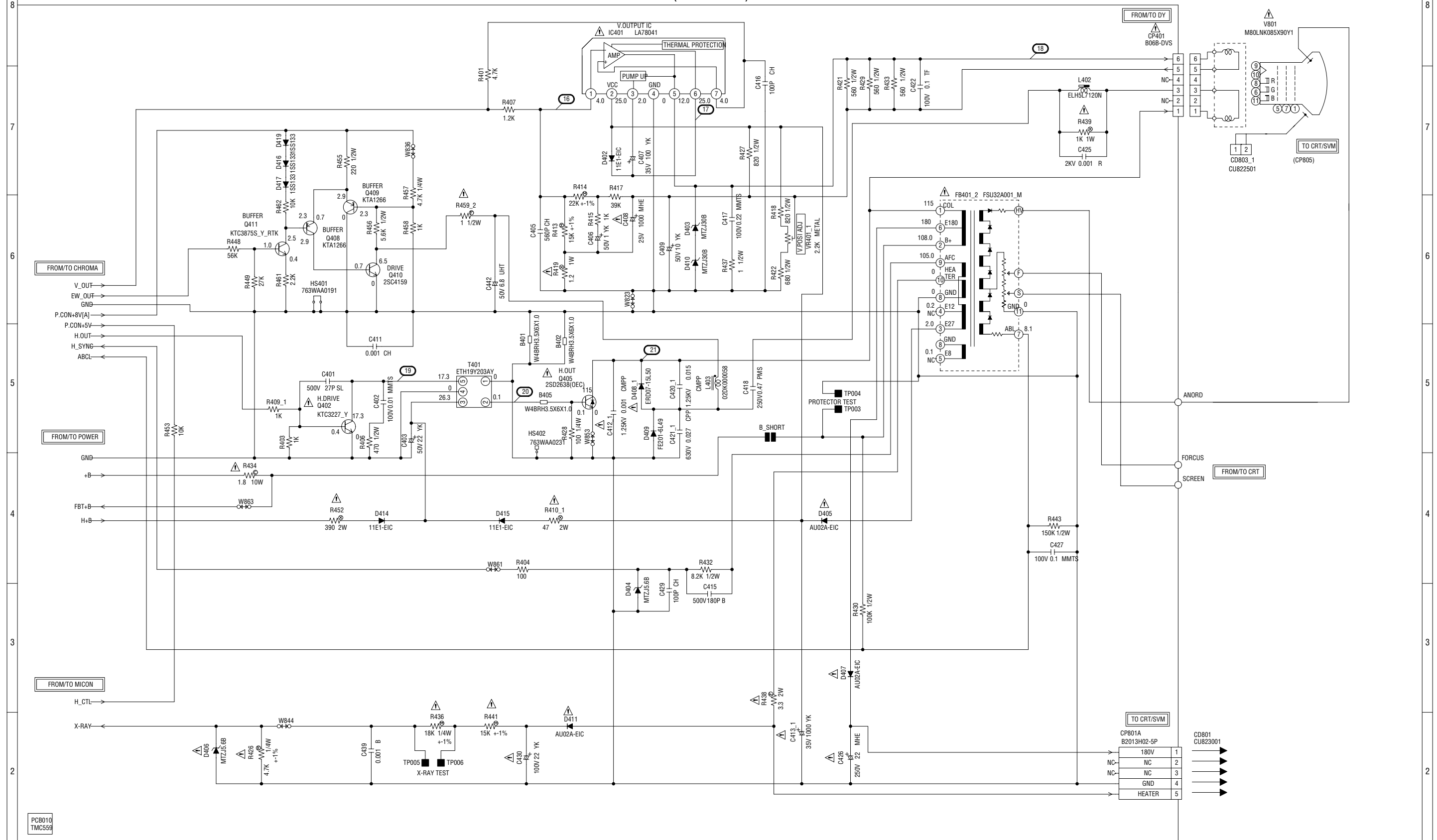
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPARÉES PAR UN  ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

PCB010
TMC559

DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

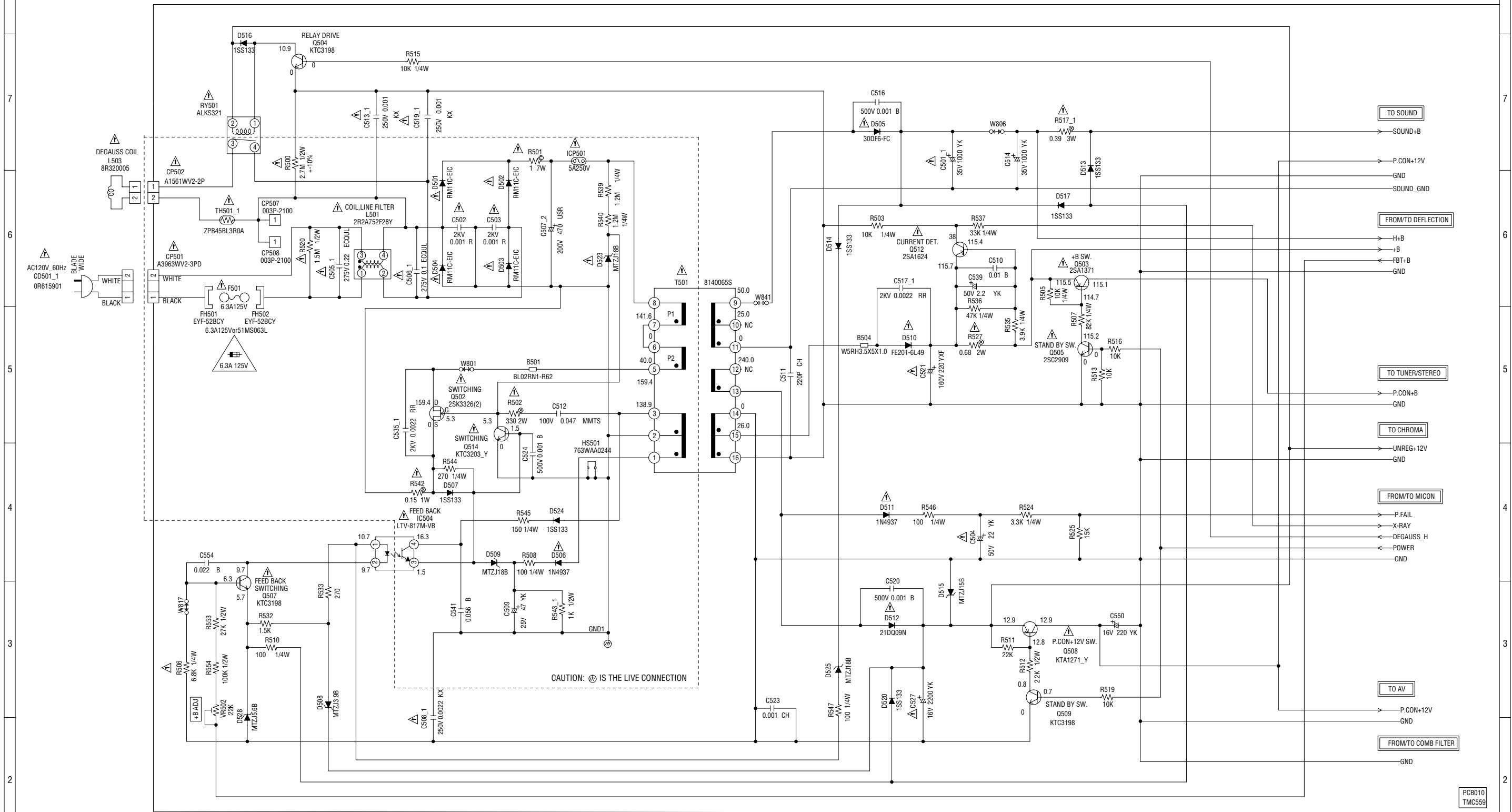
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .

POWER SCHEMATIC DIAGRAM
(MAIN PCB)



CAUTIONFOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE 6.3A 125V(F501)

ATTENTIONPOUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE
N'UTILISER QUE DES FUSIBLE DE MEME TYPE 6.3A 125V(F501)

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

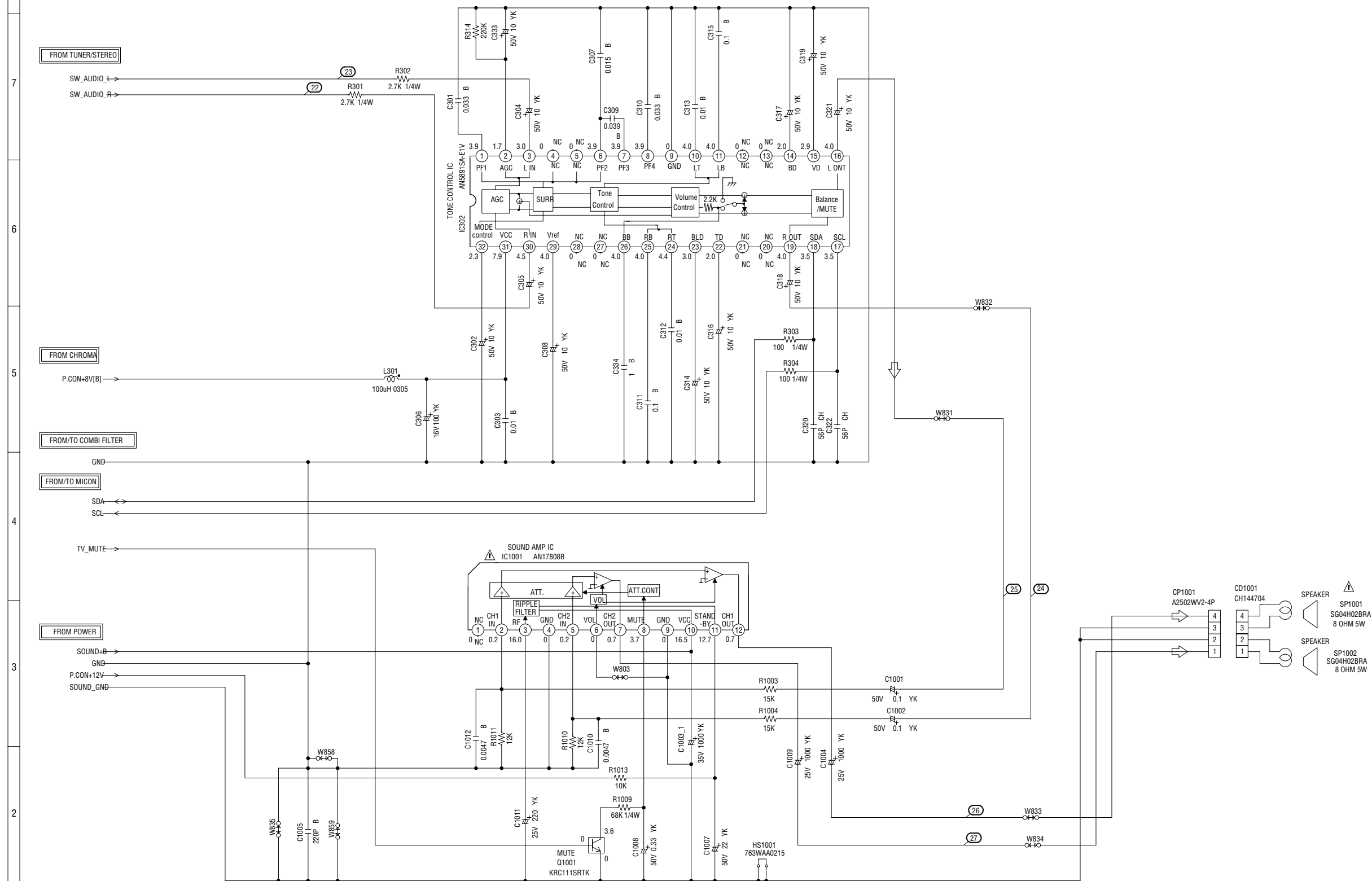
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

ATTENTIONLES PIECES REPARÉES PAR UN ETANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES.

CAUTIONSINCE THESE PARTS MARKED BY ARE
CRITICAL FOR SAFETY,USE ONES
DESCRIBED IN PARTS LIST ONLY.

SOUND SCHEMATIC DIAGRAM (MAIN PCB)



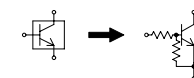
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE DES CELLULES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

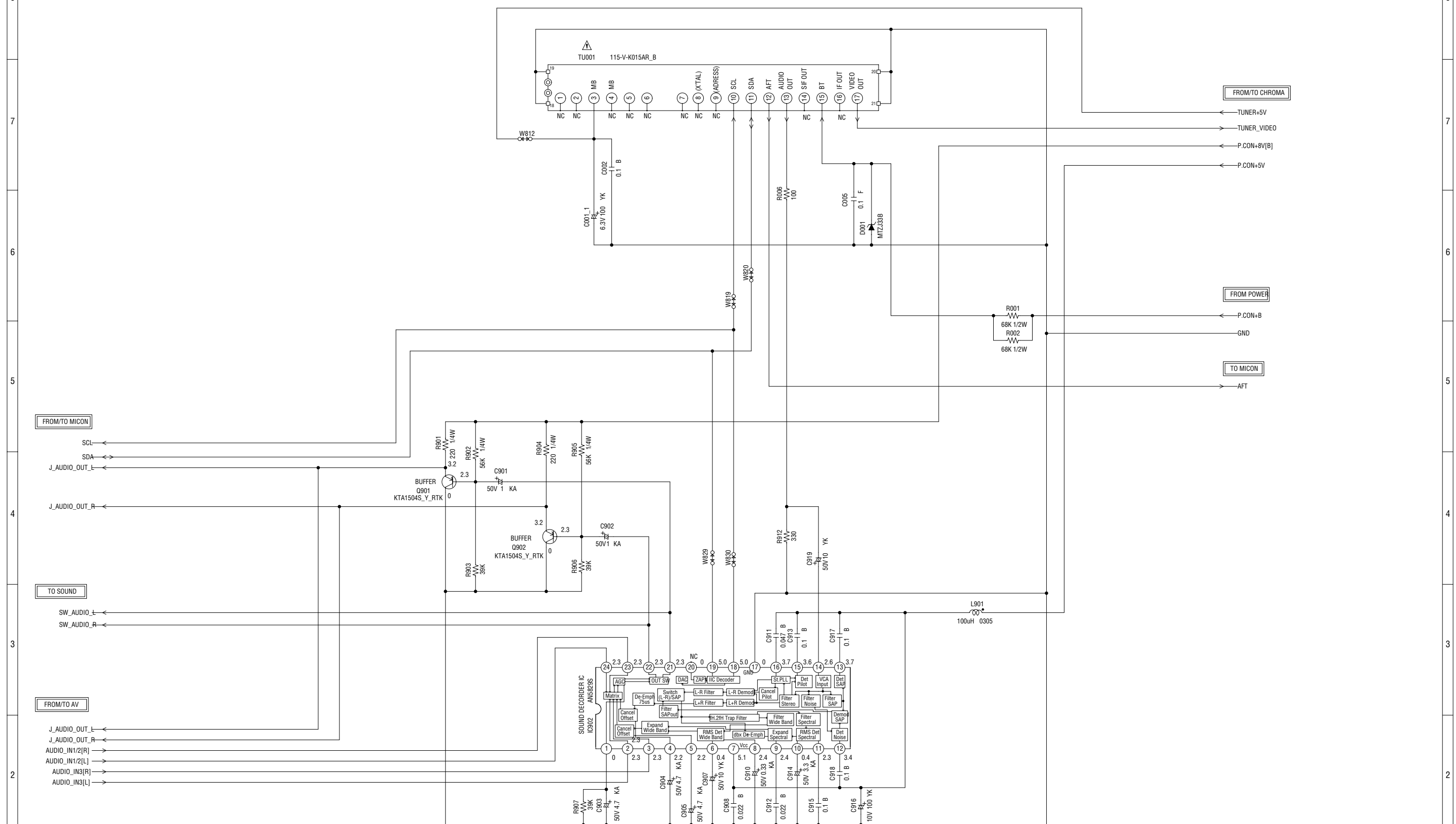
CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CAUTION: DIGITAL TRANSISTOR



PCB010
TMC559

TUNER/STEREO SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

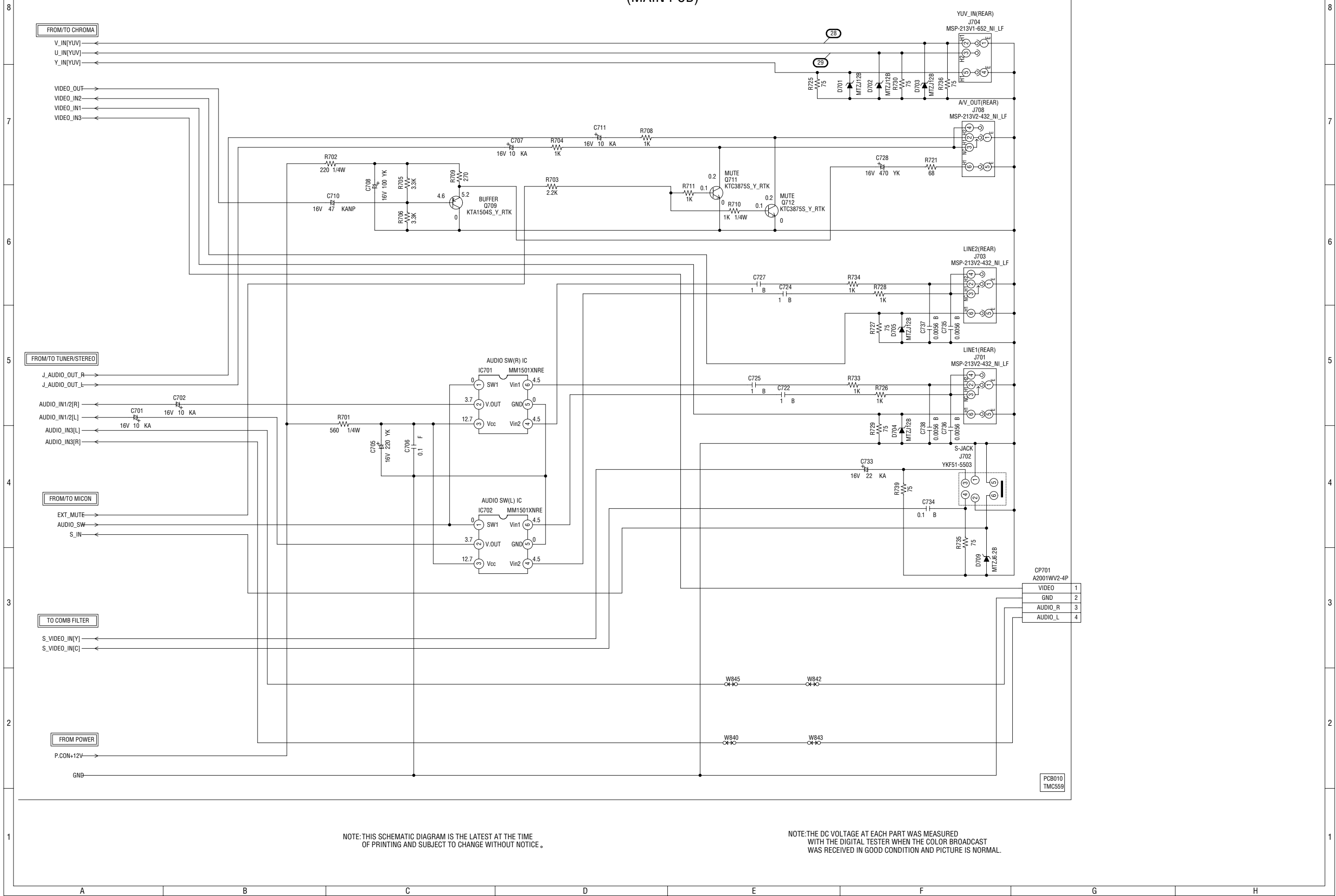
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

PCB010
TMC559

AV SCHEMATIC DIAGRAM
(MAIN PCB)

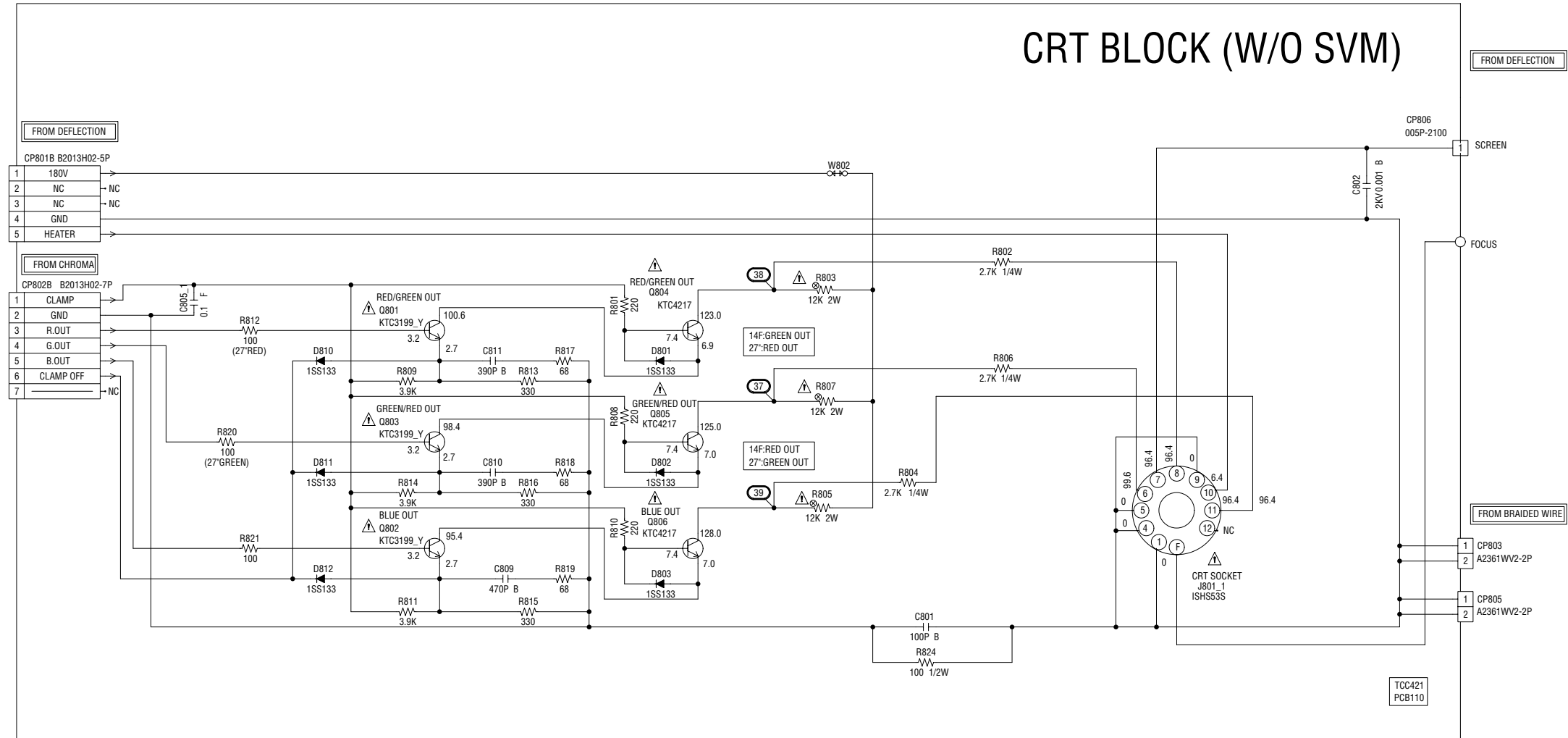


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CRT SCHEMATIC DIAGRAM
(CRT PCB)

CRT BLOCK (W/O SVM)



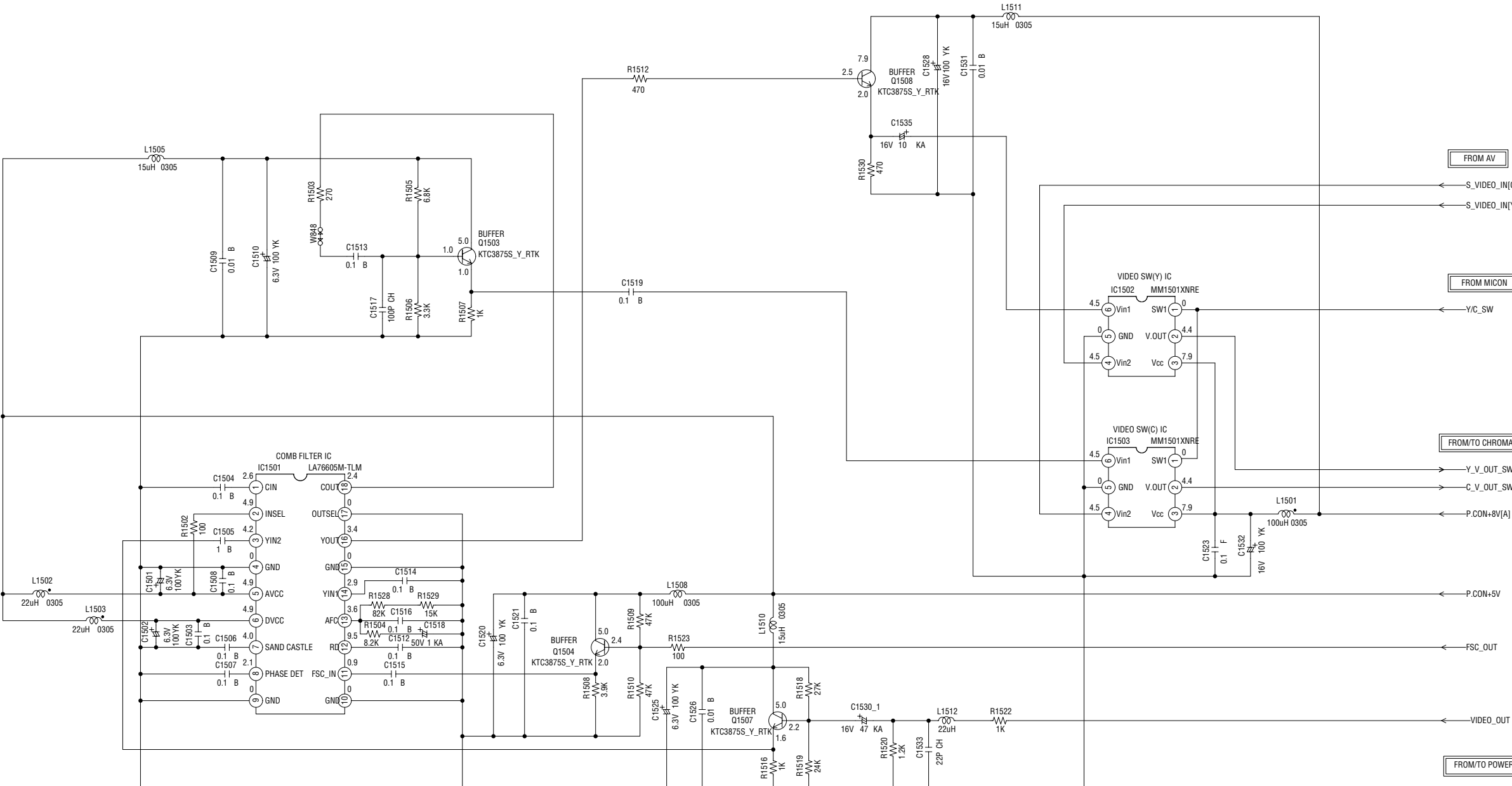
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES À UN POINT DE VUE SÉCURITÉ, N'UTILISER QUE DES CELLULES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

(MAIN PCB)

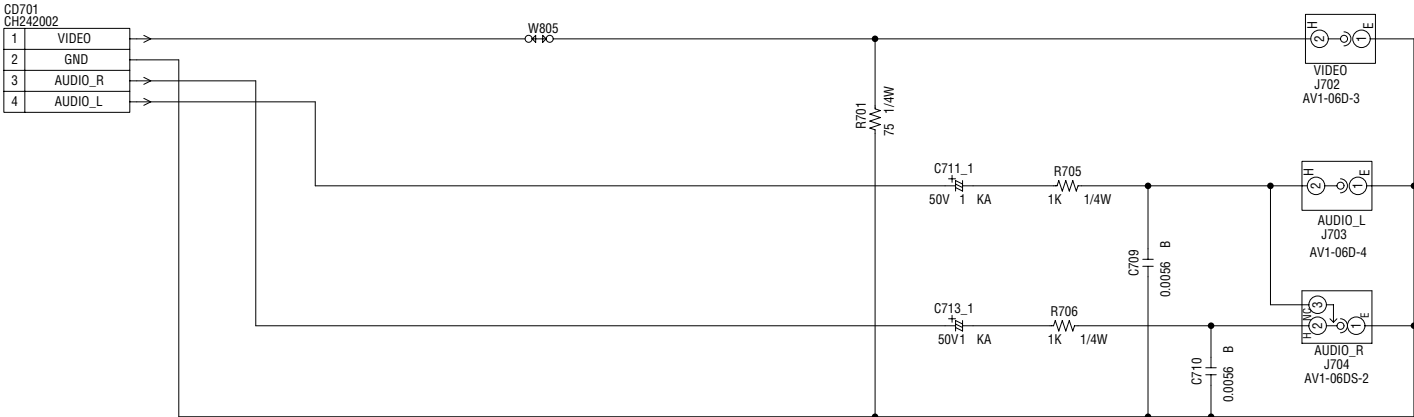


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PCB010
TMC55

AV JACK SCHEMATIC DIAGRAM
(AV JACK PCB)

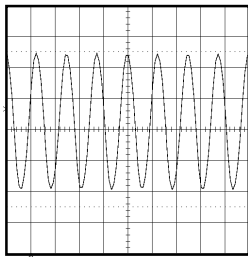


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

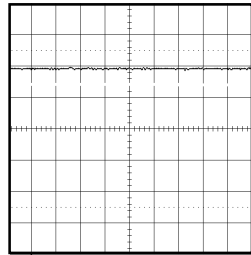
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PCB280
TEB805

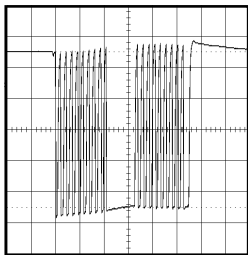
MICON



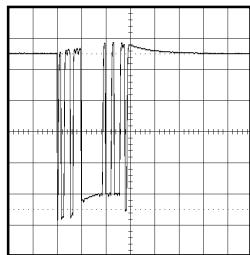
① 1V 0.1μs/div



② 1V 1μs/div

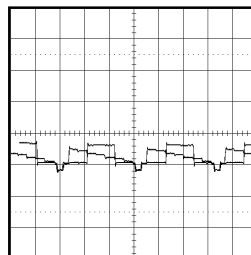


③ 1V 50μs/div

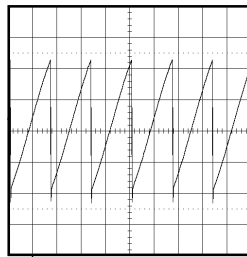


④ 1V 0.1ms/div

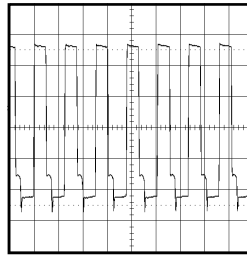
CHROMA



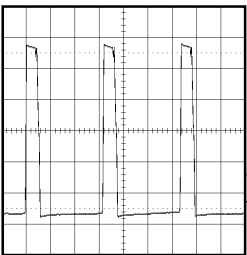
⑦ 1V 20μs/div



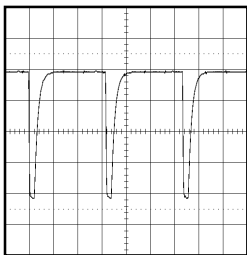
⑧ 0.5V 10ms/div



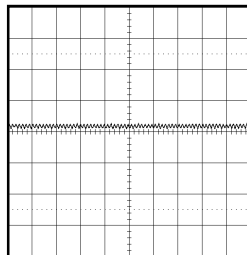
⑨ 1V 50μs/div



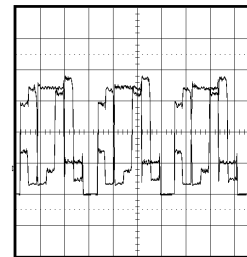
⑩ 2V 20μs/div



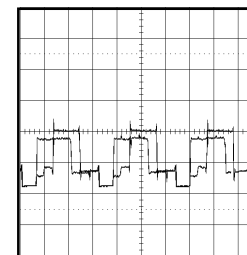
⑪ 0.5V 20μs/div



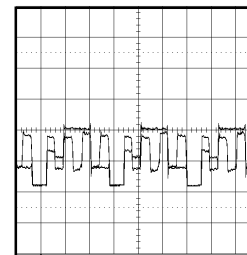
⑫ 1V 2μs/div



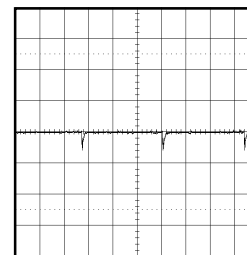
⑬ 1V 20μs/div



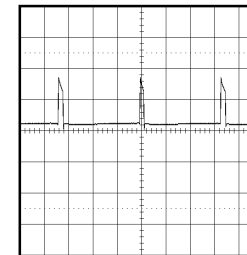
⑭ 2V 20μs/div



⑮ 2V 20μs/div



⑯ 2V 5ms/div

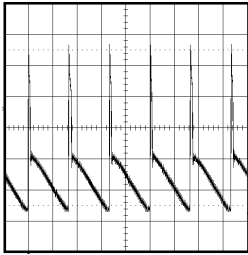


⑰ 20V 5ms/div

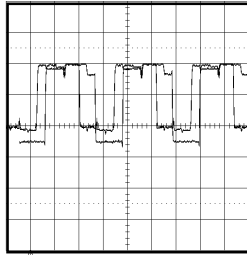
DEFLECTION

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

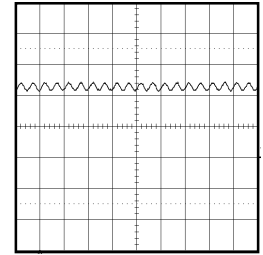
WAVEFORMS



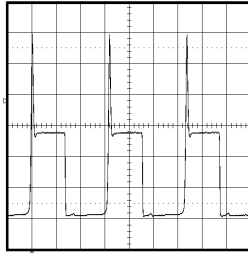
⑱ 10V 10ms/div



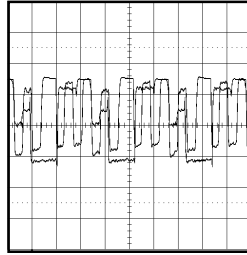
③⑧ 50V 20μs/div



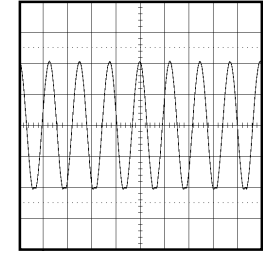
②⑤ 2V 5ms/div



①⑨ 20V 20μs/div

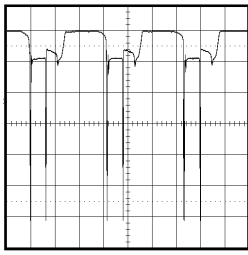


③⑨ 50V 20μs/div

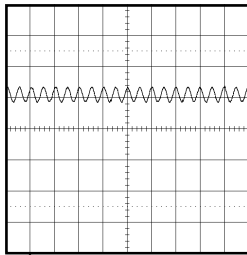


②⑥ 5V 2ms/div

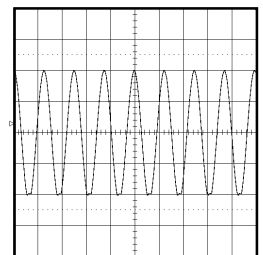
SOUND



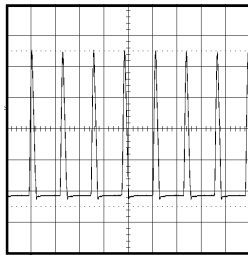
②⑩ 2V 20μs/div



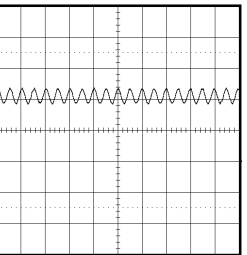
②② 2V 5ms/div



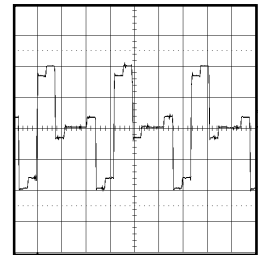
②⑦ 5V 2ms/div



②① 200V 50μs/div

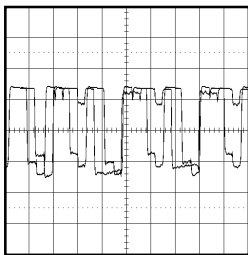


②③ 2V 5ms/div

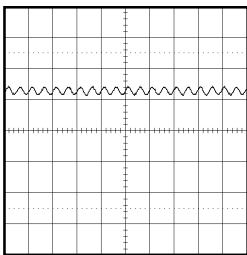


②⑧ 200mV 20μs/div

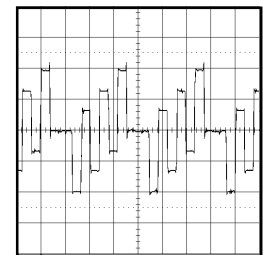
CRT



③⑦ 50V 20μs/div



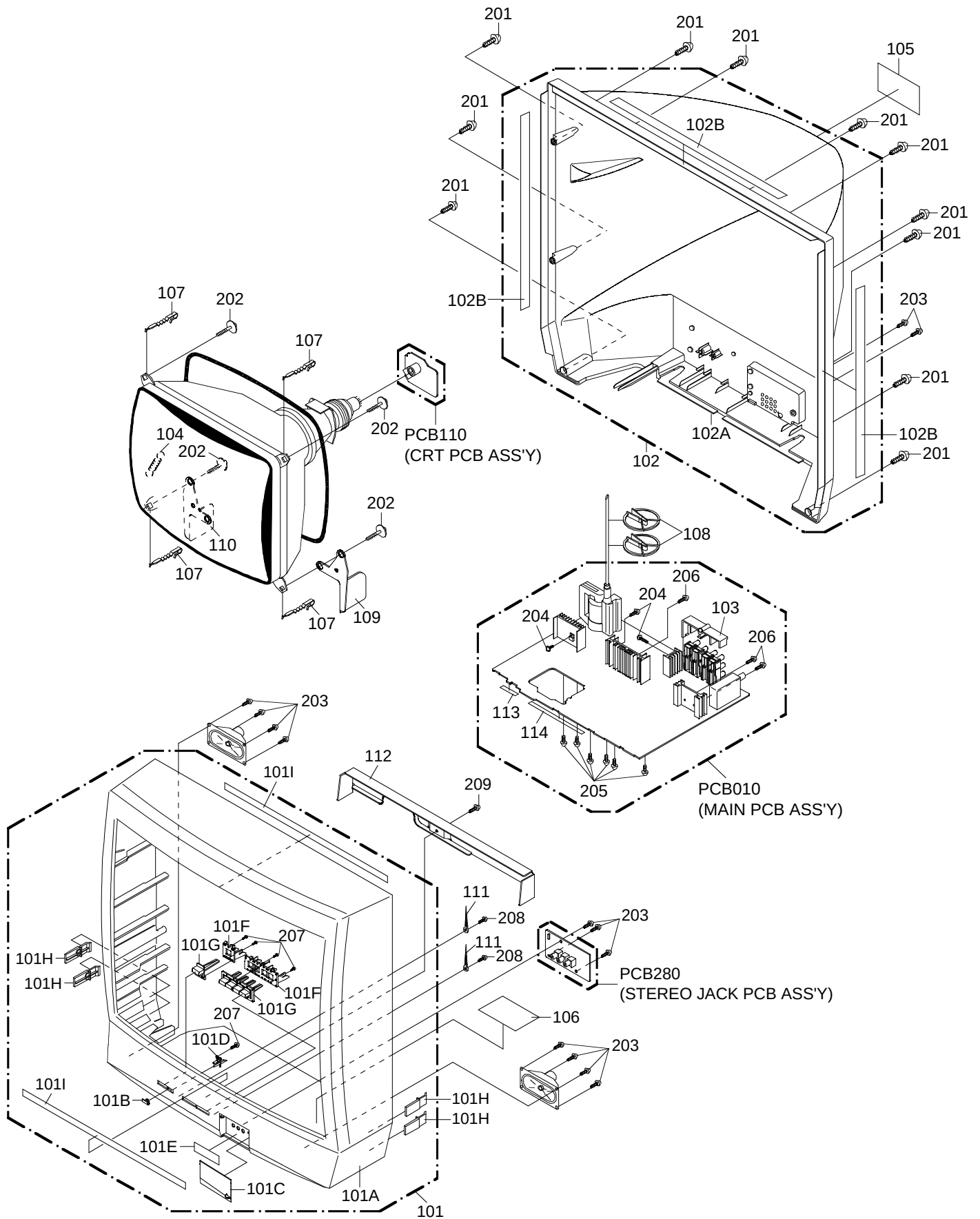
②④ 2V 5ms/div



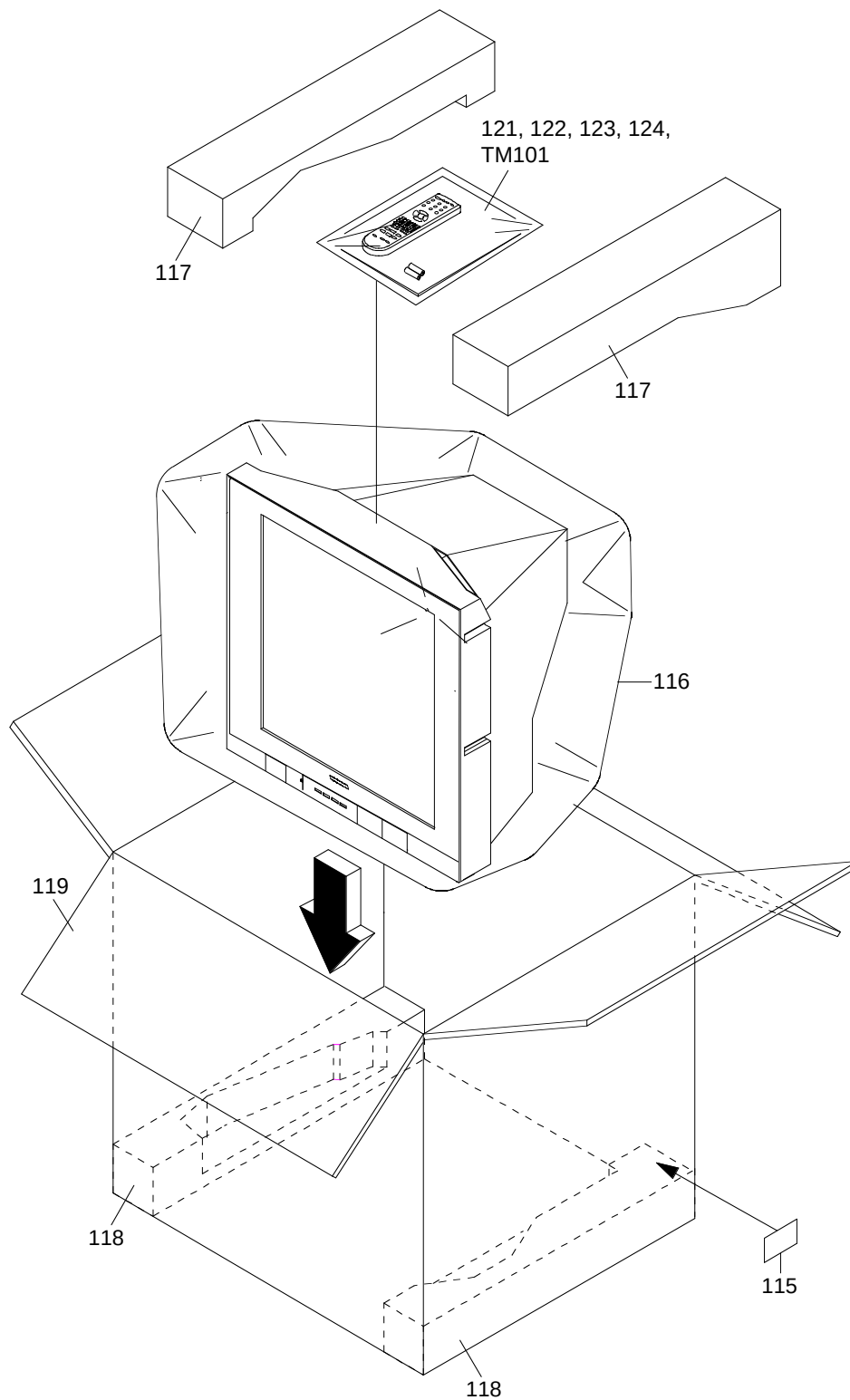
②⑨ 200mV 20μs/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW (PACKING DIAGRAM)



MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE003180	A3N510W720	CABINET,FRONT ASSY	
101A	AE003181	701WPJC547	CABINET,FRONT	
101B	AE000626	711WPA0191	PLATE,FRONT	
101C	AE003182	712WPBA085	DOOR	
101D	AE000628	713WPA0288	GLASS,LED	
101E	AE003183	723000C520	AV LABEL	
101F	AE000634	735WPA0769	STOPPER,BUTTON	
101G	AE003184	735WPBA985	BUTTON,FRAME	
101H	AE000785	709WPA0024	CABINET HOLDER	
101I	AE003069	800WQ0A070	FELT SHEET	
102	AE003185	A3N510W740	CABINET,BACK ASSY	
102A	AE003186	702WPAA645	CABINET,BACK	
102B	AE003187	800WQ0A071	FELT SHEET	
103	AD301616	761WPA0263	HOLDER,JACK	
104	AD300759	741WUA0021	SPRING,EARTH	
105	AE003188	722549A313	SHEET,RATING	
106	AD301624	724000A002	SHEET,CSA	
107	AD300768	762WPA0009	HOLDER,CRT WIRE	
108	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
109	AE001409	752WSAA059	ANGLE,CRT(R)	
110	AE001410	752WSAA060	ANGLE,CRT(L)	
111	BZ710039	8995034000	CORD CLIP UL CO.	
112	AE003189	752WSAA062	ANGLE,FRONT	
113	AE003190	800WQ0A067	FELT SHEET	
114	AE003069	800WQ0A070	FELT SHEET	
115	AE003191	723000C493	SHEET,BAR CODE	
116	AE000636	791WHA0102	LAMIFILM,BAG	
117	AE000637	792WHA0464	PACKAGE, TOP	
118	AE000638	792WHA0465	PACKAGE,BOTTOM	
119	AE003192	793WCDC091	GIFT BOX	
120	AE003193	A3N510W975	INSTRUCTION BOOK KIT	
121	AD301213	JA4UD300	POLYBAG,INSTRUCTION(RED CAUTION)	
122	AD300022	J3I70417	REGISTRATION CARD	
123	AD300023	J3I70436	ESP CARD	
124	AE003194	J3N51001A	INSTRUCTION BOOK	
201	BZ710036	8117540B04	SCREW,TAPPING(B0) TRUSS	4x20
202	AD302384	8141H60D54	SCREW,TAP TITE(P) GW22	6x45
203	BZ710031	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
204	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
205	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
206	BZ710018	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
207	BZ710032	8110630A24	SCREW,TAP TITE(P) BRAZIER	3x12
208	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
209	AE003195	8110230B54	SCREW,TAP TITE (P)	3x25

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
RESISTORS			
△R410	AD302107	R3X18A470J	47 OHM 2W
△R419	AD300784	R3X1811R2J	1.2 OHM 1W
△R426	BZ210030	R4X5T4472F	4.7K OHM 1/4W
△R434	BZ210259	R5Y2CF1R8J	1.8 OHM 10W
△R436	BZ210023	R4X5T4183F	18K OHM 1/4W
△R438	AD302133	R6358A3R3J	3.3 OHM 2W
△R439	AE000676	R3K181102J	1K OHM 1W
△R441	AD300037	R4X5T6153F	15K OHM 1/6W
△R452	AD301385	R3X18A391J	390 OHM 2W
△R459	AD301595	R65582010J	1 OHM 1/2W
△R500	BZ210080	R0G3K2275K	2.7M OHM 1/2W
△R501	AD301596	R5X2AE010J	1 OHM 7W
△R502	AD301016	R3X28A331J	330 OHM 2W
△R506	BZ210162	R002T4682J	6.8K OHM 1/4W
△R517	AD302108	R3X28BR39J	0.39 OHM 3W
△R520	BZ210206	R002T2155J	1.5M OHM 1/2W
△R527	BZ210149	R3X18AR68J	0.68 OHM 2W
△R542	AD301017	R3X181R15J	0.15 OHM 1W
△R602	AD301975	R3X28B120J	12 OHM 3W
△R649	AD301975	R3X28B120J	12 OHM 3W
△R803	BZ210050	R3X18A123J	12K OHM 2W
△R805	BZ210050	R3X18A123J	12K OHM 2W
△R807	BZ210050	R3X18A123J	12K OHM 2W
CAPACITORS			
C408	BZ110032	E5EZF3102M	1000 UF 25V
△C412	AD301390	P4N8FJ102H	C 0.001 UF 1.25KV
C413	AD301977	E0ELF4102M	1000 UF 35V
C418	BZ210173	P4J7F3474J	0.47 UF 250V PMS
△C420	AD300723	P4N8FJ153H	0.015 UF 1.25KV
C421	AD301123	P3N1F5273J	0.027 UF 630V
C425	BZ110202	C0PLRR713K	0.001 UF 2KV R
C426	AD300061	E5EZF220M	22 UF 250V
△C430	BZ110195	E02LU8220M	22 UF 100V
C442	AD301601	E53FF56R8M	6.8 UF 50V NP
C501	AD300067	E02LF4102M	1000 UF 35V
C502	BZ110202	C0PLRR713K	0.001 UF 2KV R
C503	BZ110202	C0PLRR713K	0.001 UF 2KV R
△C505	BZ110025	P2122B224M	0.22 UF 275V ECQUL
△C506	BZ110035	P2122B104M	0.1 UF 275V ECQUL
C507	BZ110248	E52DGC471M	470 UF 200V
△C508	AD301108	CD39E0MH3M	0.0022UF 250V
△C513	AD301026	CD39E0M13M	0.001 UF 250V
C514	AD300067	E02LF4102M	1000 UF 35V
C517	BZ110201	C0PLRR7H3K	0.0022 UF 2KV R
△C519	AD301026	CD39E0M13M	0.001 UF 250V
C521	AD301025	E62NFB221M	220 UF 160V
C527	BZ110119	E02LF2222M	2200 UF 16V
C535	BZ110201	C0PLRR7H3K	0.0022 UF 2KV R
C646	AD301321	CQG0CH412J	100 PF 50V CH
C802	BZ110247	C0JBB0713K	0.001 UF 2KV B
C1003	AD300067	E02LF4102M	1000 UF 35V
C1004	BZ110053	E02LF3102M	1000 UF 25V
C1009	BZ110053	E02LF3102M	1000 UF 25V
DIODES			
D001	BZ410037	D97U03301B	MTZJ33B T-77
D104	BZ410006	D1VT001330	1SS133T-77
D105	BZ410006	D1VT001330	1SS133T-77
D106	BZ410020	D97U05R11B	MTZJ5.1B T-77
D109	BZ410054	0021721150	SLR-342VCT32
D113	BZ410021	D97U05R61B	MTZJ5.6B T-77
D402	BZ410043	D2WT011E10	11E1-EIC
D403	BZ410019	D97U03001B	MTZJ30B T-77
D404	BZ410021	D97U05R61B	MTZJ5.6B T-77
D405	BZ410063	D2WTAU02A0	AU02A-EIC
△D406	BZ410021	D97U05R61B	MTZJ5.6B T-77
D407	BZ410063	D2WTAU02A0	AU02A-EIC
D408	AD302110	D2CF0715L0	ERD07-15L50
D409	AD301980	D2CF2016L0	FE201-6L49
D410	BZ410019	D97U03001B	MTZJ30B T-77
△D411	BZ410063	D2WTAU02A0	AU02A-EIC
D414	BZ410043	D2WT011E10	11E1-EIC

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
DIODES			
D415	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D416	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D417	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D419	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△D501	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
△D502	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
△D503	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
△D504	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
D505	AD300076	D28F30DF60	DIODE,RECTIFIER 30DF6-FC
D506	AD300731	D2WXN49370	DIODE,SILICON 1N4937
D507	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D508	BZ410064	D97U03R91B	DIODE,ZENER MTZJ3.9B T-77
D509	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
D510	AD301980	D2CF2016L0	DIODE,SILICON FE201-6L49
D511	AD300731	D2WXN49370	DIODE,SILICON 1N4937
D512	BZ410010	D28T21DQN9	DIODE,SCHOTTKY 21DQ09N-TA2B1
D513	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D514	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D515	AD300670	D97U01501B	DIODE,ZENER MTZJ15B T-77
D516	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D517	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D520	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D523	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
D524	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D525	AD300671	D97U01801B	DIODE,ZENER MTZJ18B T-77
D528	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
D601	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D602	BZ410058	D97U08R21B	DIODE,ZENER MTZJ8.2B T-77
D604	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D605	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D606	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D607	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D608	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D701	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D702	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D703	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D704	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D705	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D709	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
D801	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D810	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D811	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D812	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
ICS			
IC101	AD301981	I56F07090A	IC OEC7090A
IC199	AE000644	A3N501N015	IC S-24C16AFJA-TB-01
IC302	AD301983	I01FF58910	IC AN5891SA-E1V
IC401	AD300414	I03TD80410	IC LA78041
△IC504	BZ410088	0002E00610	PHOTO COUPLER LTV-817M-VB
IC601	AE002803	I06FC1283A	IC M61283FP R70T
IC701	AD301988	I0UF015010	IC MM1501XNRE
IC702	AD301988	I0UF015010	IC MM1501XNRE
IC902	AD300059	I01FF58290	IC AN5829S
△IC1001	AE003081	I0FSP7808B	IC AN17808B
IC1501	AE003002	I03FE76605	IC LA76605M-TLM
IC1502	AD301988	I0UF015010	IC MM1501XNRE
IC1503	AD301988	I0UF015010	IC MM1501XNRE
TRANSISTORS			
Q101	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q103	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q402	BZ510097	TCAT03227Y	TRANSISTOR,SILICON KTC3227_Y-AT
Q405	AD302136	TD50026380	TRANSISTOR,SILICON 2SD2638(OEC)
Q408	BZ510073	TAATA12660	TRANSISTOR,SILICON KTA1266-AT(Y,GR)
Q409	BZ510073	TAATA12660	TRANSISTOR,SILICON KTA1266-AT(Y,GR)
Q410	AD300027	TC30041590	TRANSISTOR,SILICON 2SC4159(D,E)
Q411	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q502	BZ510098	T220033260	FET 2SK3326(2)
Q503	BZ510005	TA3T1371A0	TRANSISTOR,SILICON 2SA1371(D,E)-AE
Q504	BZ510069	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
TRANSISTORS			
Q505	BZ510011	TC3T029090	TRANSISTOR,SILICON 2SC2909(S,T)-AA
Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
Q508	BZ510077	TAAT012714	TRANSISTOR,SILICON KTA1271_Y-AT
Q509	BZ510069	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
Q512	BZ510004	TA3T016240	TRANSISTOR,SILICON 2SA1624-AA
Q514	BZ510070	TCAT032034	TRANSISTOR,SILICON KTC3203_Y-AT
Q601	BZ510105	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT
Q602	BZ510105	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT
Q603	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q604	BZ510105	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT
Q605	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q606	BZ510105	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT
Q607	BZ510070	TCAT032034	TRANSISTOR,SILICON KTC3203_Y-AT
Q611	BZ510105	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT
Q614	BZ510108	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK
Q709	BZ510108	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK
Q711	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q712	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
△ Q801	AD301032	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT
△ Q802	AD301032	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT
△ Q803	AD301032	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT
△ Q804	BZ510091	TCA0042170	TRANSISTOR,SILICON KTC4217(O,Y)
△ Q805	BZ510091	TCA0042170	TRANSISTOR,SILICON KTC4217(O,Y)
△ Q806	BZ510091	TCA0042170	TRANSISTOR,SILICON KTC4217(O,Y)
Q901	BZ510108	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK
Q902	BZ510108	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK
Q1001	BZ510068	TNAAJ05003	COMPOUND TRANSISTOR KRC111SR TK
Q1503	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q1504	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q1507	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
Q1508	BZ510109	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK
COILS & TRANSFORMERS			
L301	BZ310041	02167F101J	COIL 100 UH
L402	AE000617	022100031A	COIL,LINEARITY ELH5L7120N
L403	AD301606	02DK000058	COIL,CHOKE 02DK000058
△ L501	AD301124	029T000101	COIL,LINE FILTER 2R2A752F28Y
△ L503	AE000618	028R320005	COIL,DEGAUSS 8R320005
L901	BZ310041	02167F101J	COIL 100 UH
L1501	BZ310041	02167F101J	COIL 100 UH
L1502	BZ310039	02167F220J	COIL 22 UH
L1503	BZ310039	02167F220J	COIL 22 UH
L1505	AD300613	02167F150J	COIL 15 UH
L1508	BZ310041	02167F101J	COIL 100 UH
L1510	AD300613	02167F150J	COIL 15 UH
L1511	AD300613	02167F150J	COIL 15 UH
L1512	AD301608	0216A6220J	COIL 22 UH
T401	AD301125	0450190161	TRANS,HORIZONTAL DRIVE ETH19Y203AY
△ T501	AD301355	048140065S	TRANSFORMER,SWITCHING 8140065S
JACKS			
J701	AD301038	060J431019	RCA JACK MSP-213V2-432 PBSN
J702	AD300108	063Q700002	JACK YKF51-5503
J702	AD300739	060Q401048	RCA JACK AV1-06D-3
J703	AD301038	060J431019	RCA JACK MSP-213V2-432 PBSN
J703	AD300740	060Q401049	RCA JACK AV1-06D-4
J704	AD301037	060J411024	RCA JACK MSP-213V1-652 PBSN
J704	AD300741	060Q421018	RCA JACK AV1-06DS-2
J708	AD301038	060J431019	RCA JACK MSP-213V2-432 PBSN
△ J801	AD301356	066F130020	SOCKET,CATHODE RAY,TUBE ISHS53S
SWITCHES			
SW101	BZ612010	0504101T34	SWITCH,TACT EVQ21505R
SW102	BZ612010	0504101T34	SWITCH,TACT EVQ21505R
SW103	BZ612010	0504101T34	SWITCH,TACT EVQ21505R
SW104	BZ612010	0504101T34	SWITCH,TACT EVQ21505R
SW105	BZ612010	0504101T34	SWITCH,TACT EVQ21505R
VARIABLE RESISTORS			
VR401	BZ210218	V1K63H3BTE	VOLUME,SEMI FIXED NVG6TLTAB222
VR502	BZ210101	V1163H4BTC	VOLUME,SEMI FIXED EVNCYAA03BE4
P.C.BOARD ASSEMBLIES			
PCB010	AE003175	A3N510W010	PCB ASS'Y TMC559D
PCB110	AE003176	A3N510W110	PCB ASS'Y TCC421D
PCB280	AE003177	A3N510W280	PCB ASS'Y TEBB05A

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
MISCELLANEOUS			
B401	BZ310129	024HT03564	CORE,BEADS W4BRH3.5X6X1.0
B402	BZ310129	024HT03564	CORE,BEADS W4BRH3.5X6X1.0
B405	BZ310129	024HT03564	CORE,BEADS W4BRH3.5X6X1.0
B501	BZ310045	024AT03481	CORE,BEADS BL02RN1-R62T2
B504	BZ310121	024HT03553	CORE,BEADS W5RH3.5X5X1.0
BT001	AE000012	1412004008	BATTERY,MANGAN R03(AB)E_2P_G
BT002	AE000012	1412004008	BATTERY,MANGAN R03(AB)E_2P_G
△CD501	AD300746	120R615901	CORD,AC BUSH 0R615901
CD701	AE000621	06CH242002	CORD,CONNECTOR CH242002
CD801	BZ614310	WCL6844038	FLAT CABLE AWM2468 A WG26 5C GRAY 440MM
CD801	BZ614378	06CU823001	CORD,CONNECTOR CU823001
CD802	AE000651	WEL6858038	FLAT CABLE AWM2468 A WG26 7C GRAY 580MM
CD805	BZ614378	06CU823001	CORD,CONNECTOR CU823001
CP101	BZ614102	0694270139	CONNECTOR PCB SIDE 173979-7
CP401	AD300095	069X460029	CONNECTOR PCB SIDE B06B-DVS
CP501	BZ614176	069S320419	CONNECTOR PCB SIDE A3963WV2-3PD
CP502	AD300687	069S420110	CONNECTOR PCB SIDE A1561WV2-2P
CP507	BZ614444	069D01001A	CONNECTOR PCB SIDE 003P-2100
CP508	BZ614444	069D01001A	CONNECTOR PCB SIDE 003P-2100
CP701	AD301998	069S240629	CONNECTOR PCB SIDE A2001WV2-4P
CP803	BZ614269	069S320010	CONNECTOR PCB SIDE A2361WV2-2P
CP805	BZ614269	069S320010	CONNECTOR PCB SIDE A2361WV2-2P
CP806	BZ614058	069W010010	CONNECTOR PCB SIDE 005P-2100
CD1001	AE000620	06CH144704	CORD,CONNECTOR CH144704
CP1001	AD301045	069S140419	CONNECTOR PCB SIDE A2502WV2-4P
CP801A	BZ614276	067U005049	WIRE HOLDER B2013H02-5P
CP801B	BZ614276	067U005049	WIRE HOLDER B2013H02-5P
CP802A	AD301997	067U007029	WIRE HOLDER B2013H02-7P
CP802B	AD301997	067U007029	WIRE HOLDER B2013H02-7P
EL001	BZ614044	124120301A	EYE LET XRY20X30BD
EL002	BZ614043	124116281A	EYE LET XRY16X28BD
△F501	AD301046	081PC6R305	FUSE 51MS063L
△FB401	AE003178	043232008F	TRANSFORMER,FLYBACK FSU32A001_M
FH501	AE002634	06710T0009	HOLDER,FUSE EYF-52BCY
FH502	AE002634	06710T0009	HOLDER,FUSE EYF-52BCY
△ICP501	AE000623	0835A05005	MICRO FUSE 20N_5000FSW
OS101	AD301048	0773071001	REMOTE RECEIVER RPM7138-WH5
△RY501	AD300114	0560V20115	RELAY ALKS321
△SP1001	BZ614381	070C546004	SPEAKER SG04H02BRA
△SP1002	BZ614381	070C546004	SPEAKER SG04H02BRA
△TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT ZPB45BL3R0A
TM101	AE000622	076R0GW010	TRANSMITTER R25-1939
△TU001	AE000273	0163300005	RF UNIT 115-V-K015AR_B
△V801	AE003179	0981320604	CRT W/DY M80LNK085X90Y1
X101	AD302002	100CT8R005	CRYSTAL HC-49/U-S
X602	AD302003	100CT3R505	CRYSTAL HC-49/C
RESISTOR			
	RC.....	CARBON RESISTOR	
CAPACITORS			
	CC.....	CERAMIC CAPACITOR	
	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
	CP.....	POLYESTER CAPACITOR	
	CPP.....	POLYPROPYLENE CAPACITOR	
	CPL.....	PLASTIC CAPACITOR	
	CMP.....	METAL POLYESTER CAPACITOR	
	CMPL.....	METAL PLASTIC CAPACITOR	
	CMPP.....	METAL POLYPROPYLENE CAPACITOR	

TOSHIBA CORPORATION

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